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NEWFOUNDLAND AND LABRADOR, No. 73, 1899



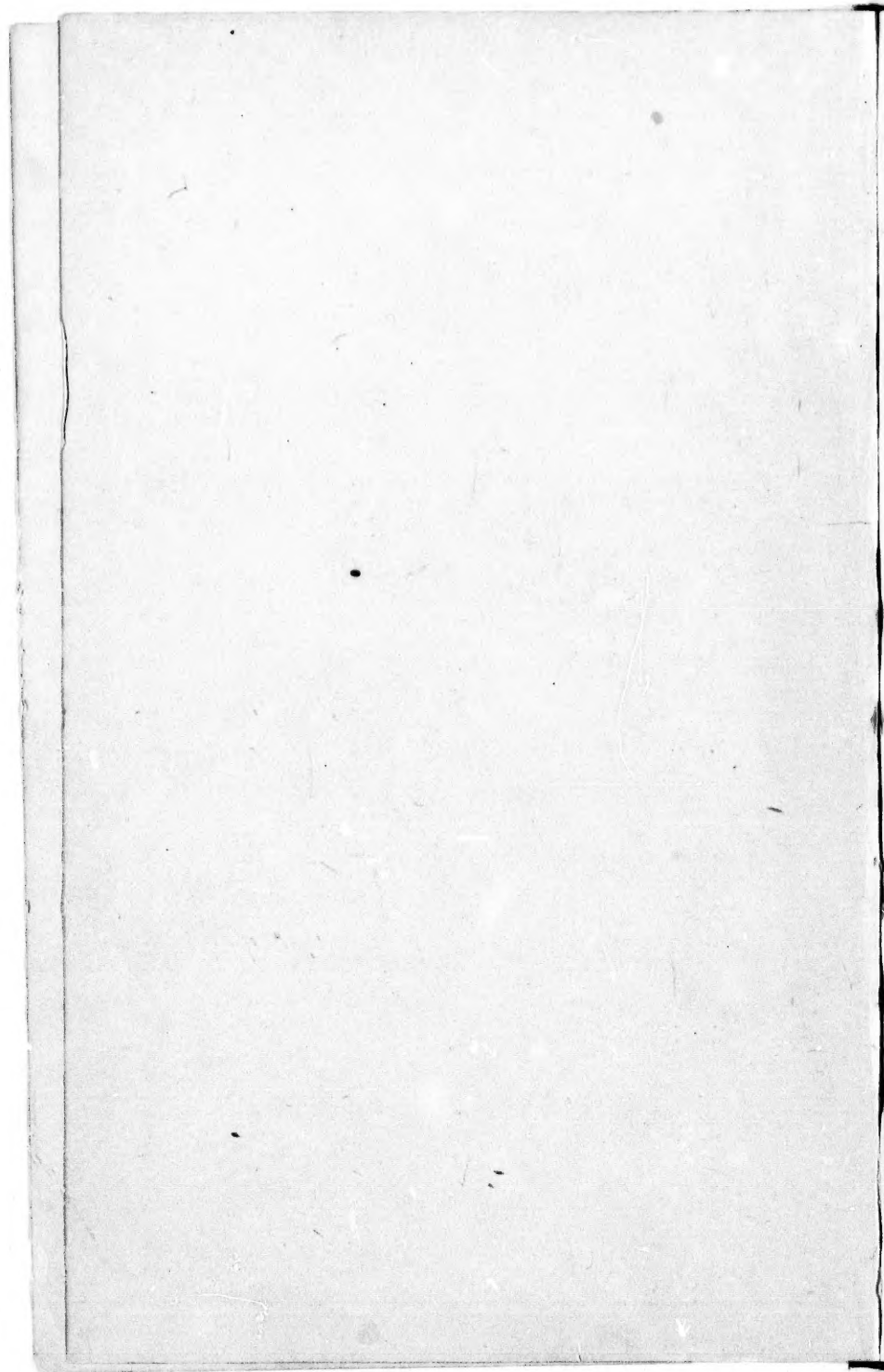
DEPARTMENT OF THE INTERIOR

NEWFOUNDLAND

COAST OF LABRADOR, FROM CANTON, NEW

NO. 73, 1899

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No. 73.



United States. HYDROGRAPHIC OFFICE.

NEWFOUNDLAND

AND THE

COAST OF LABRADOR, FROM CAPE ST. LEWIS
TO GRAND POINT.

SECOND EDITION.

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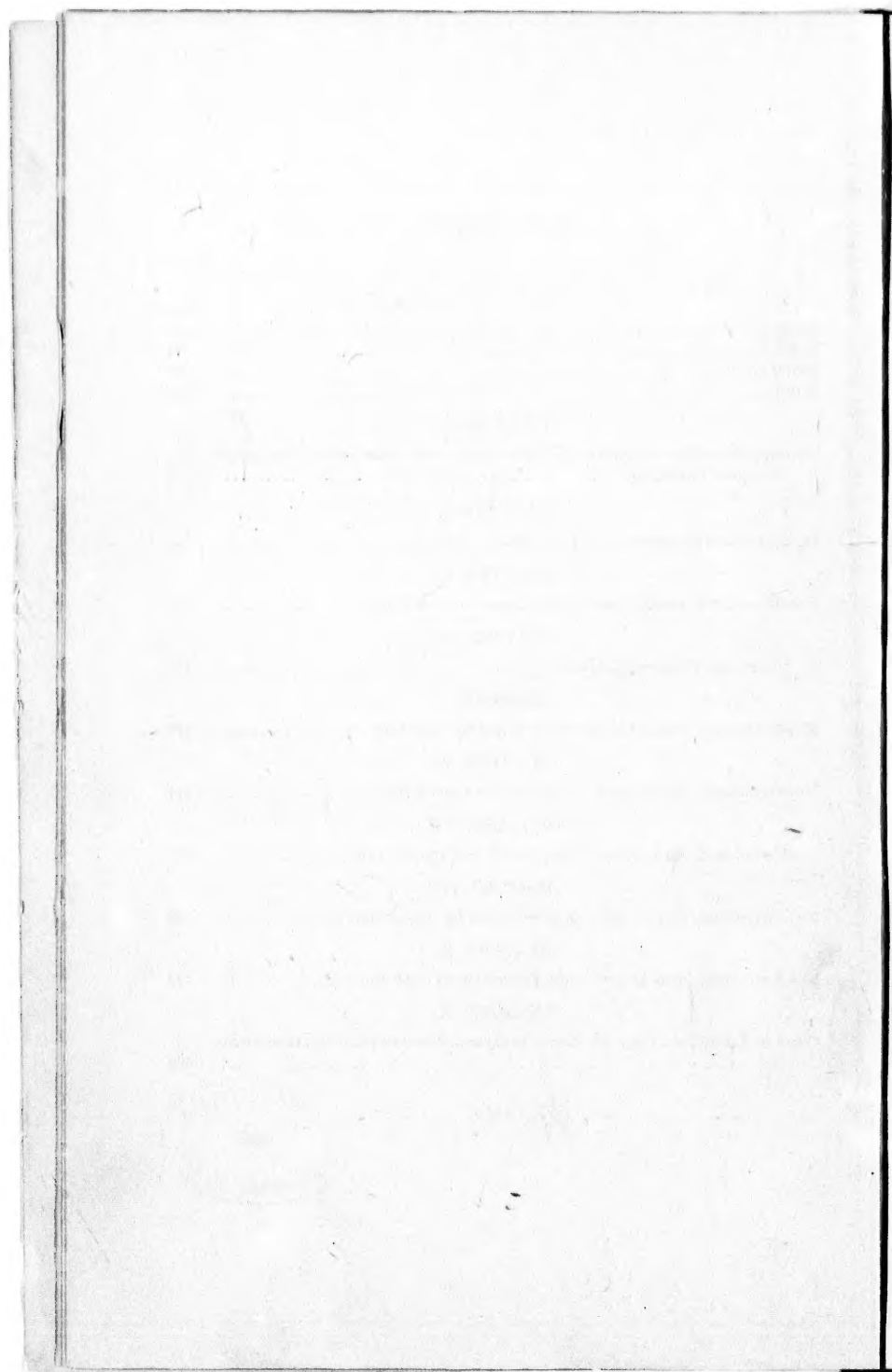
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PREFACE.

The first edition of this work was compiled by Lieut. W. W. Gillpatrick, U. S. Navy, and Ensign John Gibson, U. S. Navy. The present edition has been compiled by Mr. R. C. Ray, U. S. Navy, chiefly from the first edition, and British Admiralty publication, Newfoundland and Labrador Pilot, Third Edition, 1897, and such additions and corrections as have become available from reports received.

The meteorological remarks in the opening chapter have been revised by Mr. James Page, in the Division of Meteorology.

Since much of the coast described is imperfectly surveyed, mariners are requested to point out to the United States Hydrographic Office, either directly or through one of its branch offices, any errors and omissions that they may discover. With a view of making the next edition of this publication more useful and complete, new information is also requested.

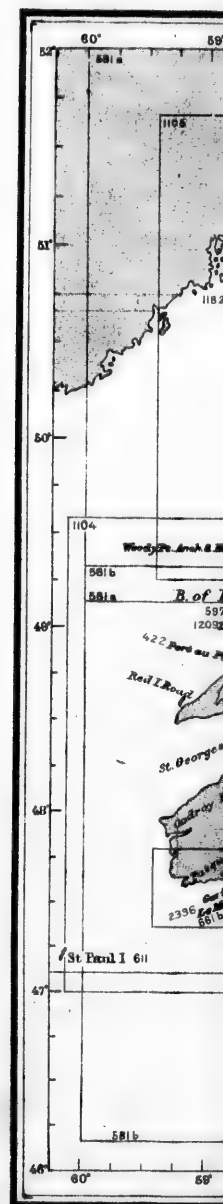
J. E. CRAIG,
Commander, U. S. Navy, Hydrographer.

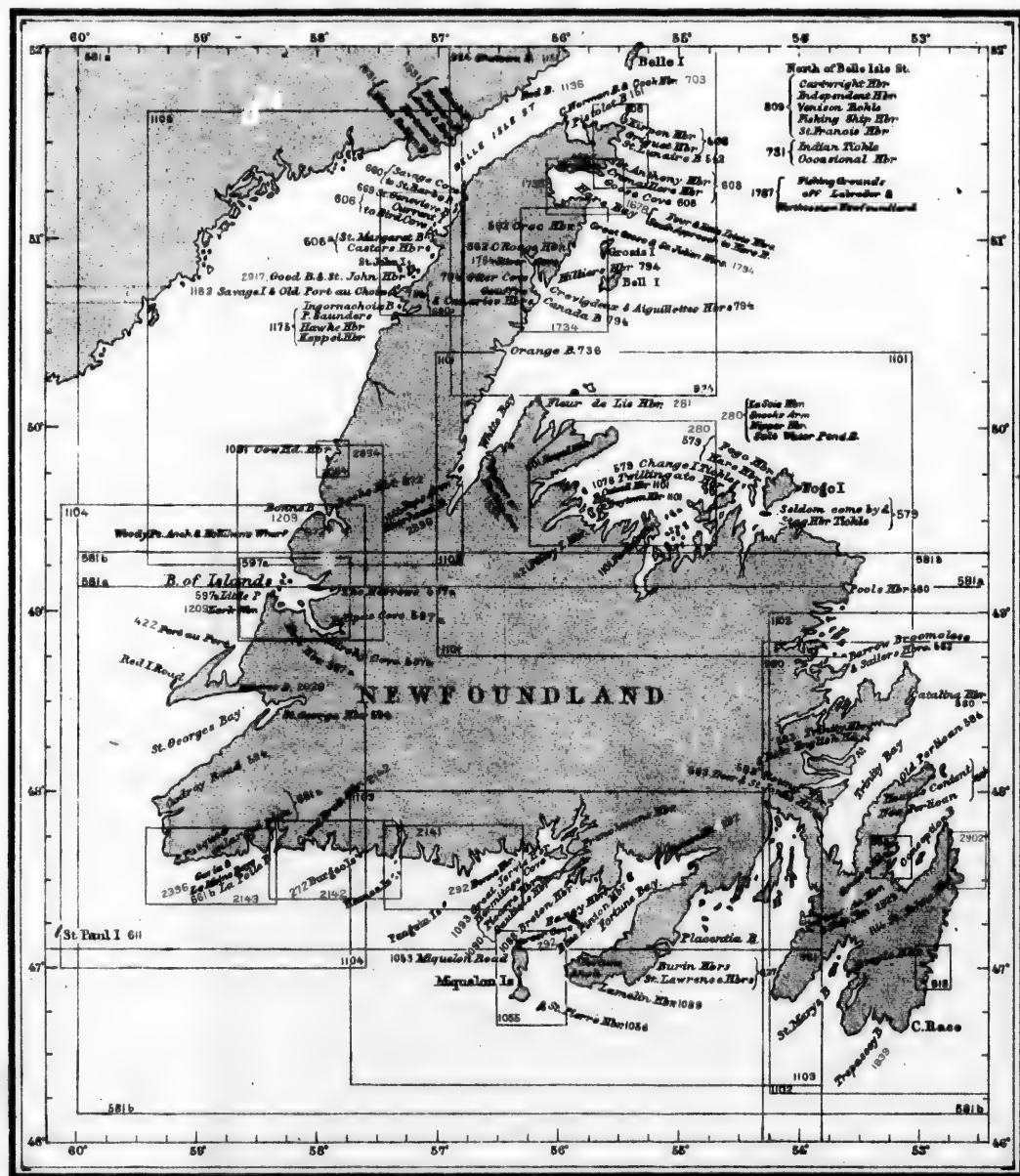
UNITED STATES HYDROGRAPHIC OFFICE,
Washington, D. C., April, 1899.

NOTE.

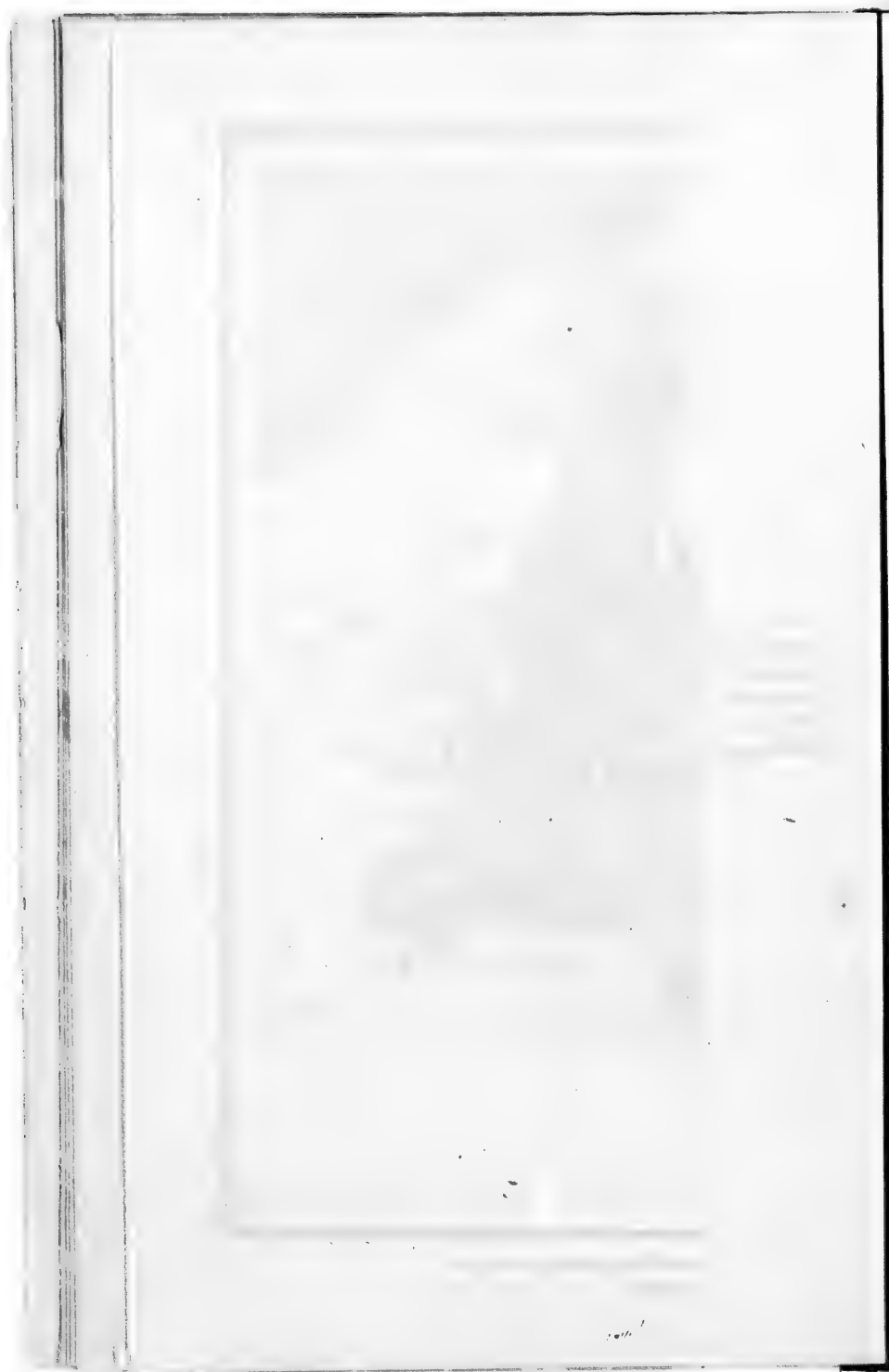
The bearings, courses, and trend of the land are true; but for convenience the corresponding magnetic bearings, to the nearest degree, follow in parentheses. (Variation in 1900.) The directions of the winds are given for the points from which they blow; the directions of the currents for the points toward which they set. Distances are expressed in nautical miles. Soundings, unless otherwise stated, are reduced to mean low water.

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CHAPTER I.

GENERAL REMARKS—CLIMATE—WINDS—FOGS—CURRENTS—ICE—
PASSAGES—COMPASS VARIATION.

Newfoundland is situated at the mouth of the Gulf of St. Lawrence; it extends from latitude $46^{\circ} 35' N.$ to $51^{\circ} 40' N.$, lying between the meridians of $52^{\circ} 35'$ and $59^{\circ} 25' W.$, and from Cape Clear in Ireland to St. Johns Harbor in Newfoundland, the distance by great circle is 1,675 miles.

This extensive island is said to have been known to the Northmen at a very early date, but the first authentic account of its discovery is that by Sebastian Cabot, who, when seeking to penetrate by a northwestern route to China and the Spice Islands, observed the land (probably in the neighborhood of Cape Bonavista) on St. Johns day, June 24, 1497. Although fishermen from all countries soon resorted to its shores, no serious attempt at colonization appears to have been made until 1583, on the 5th August, in which year Sir Humphrey Gilbert took formal possession of Newfoundland in the name of Queen Elizabeth.

In 1623 Lord Baltimore settled a colony in the neighborhood of Ferryland, but after a few years left to establish the more flourishing seaport that now bears his name. From this time the east coast of the island was gradually settled by the English, French settlers occupying the southern shores and making Placentia their capital. By the treaty of Utrecht [1713] Newfoundland was declared to belong wholly to Great Britain, the French retaining St. Pierre and Miquelon Islands, with the right to cure fish on a portion of the Newfoundland shore; subsequently arranged to extend from Cape Ray, along the west, north, and east coasts, to Cape St. John.

Physical Features.—Newfoundland is somewhat of a triangular form (the apex being at Cape Bauld, the base between Capes Race and Ray), and has an area of about 42,000 square miles. The shores are indented with deep bays and harbors which nearly all offer shelter to vessels during the summer months. Many of them are magnificent harbors, that in another climate might be a source both of riches and maritime power. The surface of the island is wild and rugged and the coast, consisting of steep, sterile, rocky shores, often denuded of all vegetation, or only covered with small trees, has an aspect far from prepossessing. That part of the island nearest the sea is generally hilly; the ranges, which do not reach any great elevation, having a N.E. and S.W. trend.

This is also the case in the bays, rivers, valleys, and larger lakes, and is probably due to glacial action. The interior proper is an elevated undulating plateau, traversed by ranges of low hills, the surface being diversified by valleys, woods, marshes, and large lakes, locally known as ponds, which completely intersect the country from the Bay of Exploits, Hall and White Bays, on the NE., to St. George and Despair Bays, respectively, on the west and south side. Some excellent timber, of large size, is found on the west coast and on some few other portions of Newfoundland; but as a rule it is only at the heads of bays, and in sheltered places, that trees attain sufficient proportions to make masts for even small vessels, and to obtain a mast for a large schooner necessitates generally a long journey into the interior.

Looking inland from the coast ranges of hills the country generally seems to consist of as much water as land, so numerous are the ponds. From these, streamlets run down every ravine, and the larger valleys contain rivulets in which trout can generally be obtained.

Lakes.—The lakes or ponds previously referred to constitute one of the most remarkable of the physical features of the island, occupying, as they do, about one-third of its area. The principal of these are Grand Lake, which is the largest, only 50 feet above the level of the sea, 56 miles in length, 5 in breadth, about 60 fathoms at its deepest part, and covers an area of nearly 200 square miles; Indian Lake, 37 miles; Gander Lake, 33 miles; Deer Lake, 15 miles in length.

Rivers.—The rivers of Newfoundland are numerous, and though the majority are small, yet some attain considerable size. The largest are the Exploits, Humber, Gander, and Terra Nova. Exploits River, which has its rise near the southern extremity of Long Range, is 200 miles in length, drains an area of between 3,000 and 4,000 square miles, and falls into Exploits Bay on the east coast. The main branch of the Humber River rises 20 miles inland from Bonne Bay, is about 130 miles long, drains about 2,000 square miles, and falls into Humber Arm on the west coast. The Gander River, 100 miles in length, flows through Gander Lake, and, with its tributaries, drains an area of nearly 4,000 square miles; it falls into Hamilton Sound.

Mines.—Of the minerals with which the country abounds, two only, copper and lead, have been profitably worked; the former at Tilt and Betts Coves and Little Bay, in Notre Dame Bay, and the latter at La Manche, in Placentia Bay. The indications have been hitherto little explored, but the increasing facilities of railway communication will probably lead to valuable future discoveries.

Agriculture is pursued with fair success on the west coast, where grass and cereals of the first quality can be produced. A large tract of fertile soil has been discovered near Gander Bay, and there is also good land in the vicinity of Goose Bay and Clode Sound, at the head of Bonavista Bay.

Population.—The seacoast of Newfoundland is the only inhabited portion, and there are but few settlers on the western shore, two-thirds of the entire population being found on the peninsula of Avalon. The census made in 1891 showed a total population of 202,040, including that portion of the Labrador coast under the Newfoundland Government, excluding the Eskimo natives.

Orthography.—Many of the place names in Newfoundland were originally French, but, owing to the pronunciation of the fishermen, they have become so much corrupted as to be difficult of recognition as such. For instance, Anse à Loup is known to the fishermen as "Lancy Loo," and Anse Éclair as "Lancy Clair."

Seal fishery.—This industry is prosecuted in the months of March, April, and May, the sailing fleet leaving on the 1st of March, while the steam vessels are detained till the 12th of March. The seal bearing ice is sought immediately and the young seals secured. When full cargoes have been obtained the vessels return, discharge, and start again for a second and occasionally even a third trip.

Cod fishery.—The cod fisheries of Newfoundland are more valuable than those of any other country, and the fishing grounds, worked for centuries, would under ordinary circumstances appear to yield an almost inexhaustible supply; but of late years, owing to reckless and destructive fishing, and the introduction of engines of such a character as to be the means of destroying gravid and even immature fish, there has been a perceptible decline in the yearly yield. The comparatively modern implements used are cod traps, large seine nets, small mesh nets, bultows, or long lines, and jiggers.

In 1888 a Fisheries Commission was appointed, since which means have been taken to impress upon fishermen the destructive nature of the course pursued in the use of many of their appliances, and rules have been drawn up for their guidance. This, in conjunction with the establishment of a cod hatchery at Dildo Island, which during the four years 1890-1893 turned out 423,439,000 young fish, should be attended by beneficial results.

Herring Fishery.—The principal herring fisheries are at Fortune, Placentia, and St. Georges Bays, the Bay of Islands and Labrador, the two latter being the most valuable. Fortune Bay is a winter herring fishery, commencing early in December; St. Georges Bay is a spring fishery.

Salmon Fishery.—Every destructive engine that human ingenuity could contrive would appear to have been used in the extermination of salmon, further aided by the pollution of the streams, so that the small export of preserved salmon, which seldom reaches the value of \$100,000 annually, is easily accounted for. The Fisheries Commission, before mentioned, having now appointed wardens on the principal rivers, the preservation of fish during the spawning season, prohibition of pollution, and use of illegal engines should, if carried out, be instrumental in restoring the rivers to their old prolific state.

Lobster Fishery.—The lobster fishery, commenced in 1873, is an increasing industry, which is likely to be further developed by the successful use of floating incubators for hatching lobsters. In the four years, 1890–1893, the total number of lobsters hatched and planted was 1,886,767,000, and according to the census of 1891 there were then 340 lobster factories, employing 4,807 persons.

Labrador, although discovered by Cabot in 1496, was not visited until 1501, when Corte Real named it Terra Labrador (cultivable land), to distinguish it from Greenland, which he named Terra Verde. The name is now applied not only to the east coast but to the whole peninsula, bounded on the west by Hudson Bay.

The greatest length of Labrador is 1,100 miles, and breadth 700 miles, the area being about 420,000 square miles. It is generally described as one of the most dreary and naked regions of the globe, exhibiting scarcely anything except rocks destitute of vegetation; but though this be its appearance when seen from off the coast, on penetrating a little into the interior the surface is found to be clothed with pines, beeches, and poplars.

Geology.—The NE. coast of Labrador is composed of Laurentian gneiss, with intrusive granite and many quartz veins, the formation generally being Laurentian, having resting on it at various points, Lower Silurian beds, while over the country are gneiss ranges of mountains and gneiss boulders. Copper and lead ores have been found on the coast, also gold and mica. The hills fall steeply to the sea, often in steep cliffs, terminating in most cases in rugged, rocky points, the single remarkable exception being the strand on each side of Cape Porcupine, which is the only sandy beach of any extent on the whole coast as far as Nain.

Lakes.—The whole country is covered with innumerable lakes, ponds, and pools, from the deep mountain *tarns* on the summit of the water sheds to the broad shallow lakes and pools spread over the surface below. The almost universal shallowness of these lakes is a singular feature.

Fisheries.—There are only a few permanent inhabitants, but cod fishery is carried on extensively from July to October by the

inhabitants of Newfoundland; about 3,000 people leaving their homes on the east coast, and proceeding in small craft to these shores, bringing their families for the season, and having huts and fishing stages at almost every bay, cove, and harbor, while others follow the fish to the northward in their vessels. The principal fishing stations are at Battle and St. Charles Harbors. The fishery is carried on in small brigs and schooners, generally of from 30 to 100 tons, and in boats. When the vessels return to Newfoundland, a few persons are left, who winter up the bays of the mainland to hunt for furs, and to be ready for the seal fishery at the breaking up of the ice in spring. The boats are hauled up on the rocks, or taken into coves of the mainland, where they are covered over with spruce branches and are thus secured for the winter.

Fish caught at the settlements are cured there, and in many cases exported, in English schooners, direct to foreign markets; those taken by vessels are cleaned and packed in salt, to be cured at one of the southern settlements or in Newfoundland.

As far north as Aillik the fish are caught with baited hooks; north of that they are jigged with two hooks fastened to a metal imitation of a caplin.

The herring fishery begins in September, and is prosecuted principally from Assizes Harbor, which is crowded with vessels at that time. A plentiful catch of herrings sometimes compensates for a bad cod fishery. The herrings are packed in barrels and exported direct to Canadian markets by steamers owned in Newfoundland.

Schooners sometimes follow the codfish as far as Cape Chidley, though the vicinity of Nain is the usual northern limit of the fishery. Codfish are seldom found west of Cape Chidley, nor caplin, in large quantities.

Government.—The nominal jurisdiction of the Newfoundland Government extends from Blanc Sablon to Cape Chidley, at the entrance of Hudson Bay.

Communications.—For nine months of the year direct steamship communication is maintained between St. Johns and Europe, fortnightly by the Allan line of steamships from Liverpool, also to Halifax and Baltimore. From January to April the mail steamship from Liverpool does not touch at St. Johns, but proceeds to Halifax, whence communication is maintained by local steamers plying fortnightly to St. Johns.

Between St. Johns and Montreal, Pictou, Charlottetown, and Sydney (Cape Breton) weekly by the Black Diamond line; and to New York and Halifax, about every ten days, by the Red Cross line. These latter steamers occasionally call at Pilley Island.

Local coasting steamers ply fortnightly during the navigable season to both the western and northern ports, and during the

months of July, August, and September connect with the Labrador steamer at Battle Harbor.

The steamers of the northern route cease running when prevented by the ice in December and begin again as soon as the ice permits, generally April or May, and touch at the following places: Old Perlian, Trinity, Catalina, Bonavista, Kings Cove, Greens Pond, Fogo, Herrings Neck, Toulinguet, Exploits, Pilley Island Harbor, Little Bay Islands, Tilt Cove, Betts Cove, Nippers Harbor, St. Anthony, Belle Isle Strait, and Battle Harbor.

The mail to Greens Pond and Toulinguet is carried across the country by Indians between January and May.

Those of the western route run from early in May to December, and touch at the following places: Ferryland and Renewse; Trepassay, Placentia, and St. Marys; Burin St. Lawrence, Lamalin; Burin, St. Pierre, Grand Bank, and Fortune; Belloram, St. Jacques, Harbor Breton, Great Jervis, Gaultois, Burgeo, La Poile, Rose Blanche, Channel, Bay St. George, Bay of Islands, Bonne Bay, and Sydney (Cape Breton).

Another steamer runs frequently between St. Johns and the ports in Conception Bay.

The steamers of the Labrador route begin to run in July and cease running in October, connecting with the northern route steamer at Battle Harbor. Leaving St. Johns, they touch at Harbor Grace, Coachmans Cove, Conche, St. Anthony, Griguet, Blanc Sablon, Bonne Esperance, and to usual ports of call in Belle Isle Strait to Battle Harbor. From Battle Harbor northward they call at Spear Harbor, Ship Harbor, Francis Harbor Bight, Scrammy, Square Islands, Venison Island, Boulter Rock, Punchbowl, Bateau, Domino, Indian Tickle, Gready, Pack Harbor, White Bears, Indian Harbor, Bake-apple Bight, Smoky Tickle, Brig Harbor, Holton and Cape Harrigan, Ragged Islands, Manak Islands, Turnavik Islands, Windsors Harbor, Nain and Ramah. Only two trips are made during the season to Nain and Ramah.

Returning south, calling at Cape Harrigan, Hopedale, Winsors Harbor, Turnavik Islands, Aillik, Strawberry, Manaks Islands, Long Tickle, Rogers Harbor, Adlavik, Ragged Islands, Jigger Tickle, Cape Harrison, Sloop Cove, Sleigh Tickle, Holton, Emily Harbor, White Bears, Smoky Tickle, Bake-apple Bight, Indian Harbor, Rigoulette, Tub Island, Indian Island, Packs and Independent Harbors, the last two places alternately; Long Island and Southeast Cove alternately, Cartwright Harbor (Sandwich Bay), Black Island each alternate trip; Bateau each alternate trip, Seal Islands and Comfort Bight alternately, Snug Harbor, Dead Island, Triangle, Fishing-Ship Harbor, Little Harbor, Murray and Spear Harbors alternately, and thence to Battle Harbor.

After the first round trip in September the steamer will not go northward of Hopedale.

The Labrador mail steamer also connects with the mail from St. Johns at Battle Harbor; with Blanc Sablon, Bonne Esperance, Forteau, Anse à Loup, Red Bay, Chateau, Henley, Chimney Tickle, Cape Charles, and Assizes Harbor.

Railways.—The Northern and Western Railway, from Whitbourne, passes up the narrow neck of land, separating Trinity and Placentia Bays, traverses the Terra Nova, Gambo, and Gander Valleys, and entering the Exploits Valley at Norris Arm, crosses the Exploits River 10 miles from its mouth, a distance of 257½ miles from St. Johns. From Exploits the railway passes the N.E. end of Grand Lake, and skirts the southern side of Deer Lake, and the southern shore of Humber Arm as far as Birchy Cove, where it strikes inland, then passes along the east side of St. George Bay, at the back of the Anguille range and down the valley of the Codroy River to Port Basque, distant 550½ miles from St. Johns.

The Newfoundland Railway extends from St. Johns to Harbor Grace in Conception Bay, a distance of 83½ miles, via Whitbourne Junction; and from the latter station, 57½ miles from St. Johns, there is a branch, 27 miles in length, to Placentia Bay.

Telegraph.—Newfoundland is in direct telegraphic communication with Europe and America by submarine cables; those from England terminating at Hearts Content on the east coast, and those from France at St. Pierre on the south coast. There are four submarine cables between Ireland and Newfoundland, three between Newfoundland and Cape Breton, and two between France and St. Pierre. All the principal ports are connected by land lines with the capital.

Roads.—The opening of the Northern and Western Railway has rendered the construction of roads to connect it with the various settlements and towns on the seacoast a necessity. In 1894 there were 1,000 miles of postal roads and over 2,000 miles of district roads.

Coal.—The carboniferous district of Newfoundland is on the west coast, in the vicinity of St. George Bay and Grand Lake, but as yet these coal fields have not been worked. In 1891 the importation of coal, chiefly from Cape Breton, amounted to 97,327 tons. Coal for steaming purposes can be obtained in considerable quantities at St. Johns and Port Basque.

A small quantity (about 20 tons) may be obtained from the undermentioned places, but the supply is not certain: Bonne Bay, Burnt Islands, Tilt Cove, Little Bay, Pilley Island Harbor, Toulanguet, Greens Pond, and Catalina; and Salmon River, Blanc Sablon, Battle Harbor, and Greedy in Labrador.

Orders will be filled to any of the above ports from St. Johns.

Climate.—The climate is more temperate than that of the neighboring continent. It is but rarely, and then only for a few hours at a time, that the temperature falls below zero in winter, while the summer range rarely exceeds 80° Fahrenheit, and for the most part does not rise above 70°. The arctic current exercises a chilling influence along the east coast, but as a compensation brings the enormous wealth of commercial fishes and seals which render the Newfoundland fisheries the most valuable in the world. The salubrity of the climate is evidenced by the robust and the healthy appearance of the inhabitants. Open fireplaces are sufficient to warm the houses and free exercise in the open air is attainable at all seasons.

In the following tables are given the monthly meteorological summaries for the year 1895, at the three stations St. Johns, Sandy Point, and Belle Isle, the first near the southeastern extremity of the island, the second near the southwestern, and the third at the northern:

St. Johns, latitude N. 47° 34', longitude W. 52° 43'.

1895.	Mean pressure.	TEMPERATURE.			Rain-fall.	Fair days.
		Mean.	Max.	Min.		
January	29.96	27.5	44.0	9.0	5.93	16
February	29.66	24.5	42.0	0.0	4.75	19
March	29.68	28.7	46.0	13.0	8.12	14
April	29.96	35.6	65.0	19.0	1.71	22
May	30.01	46.9	74.0	32.0	2.97	16
June	30.08	46.9	74.0	32.0	3.60	15
July	29.93	59.7	87.0	44.0	5.01	12
August	29.95	52.8	78.0	33.0	3.47	17
September	29.95	46.2	74.0	25.0	9.02	12
October	30.11	36.8	68.0	19.0	5.38	16
November	29.94	32.3	58.0	10.0	5.40	11
December						

Sandy Point, St. George Bay, latitude N. 48° 40', longitude W. 58° 27'.

1895.	Mean pressure.	TEMPERATURE.			Rain-fall.	Fair days.
		Mean.	Max.	Min.		
January	29.80	19.3	40.3	5.0	5.0	15
February	29.66	18.0	38.0	4.2	4.2	17
March	29.58	20.7	38.3	5.0	5.0	18
April	29.90	27.1	43.5	8.8	8.8	20
May	29.89	41.4	60.3	13.2	13.2	22
June	29.97	53.5	87.2	35.3	35.3	24
July	29.82	61.6	72.5	45.0	45.0	26
August	29.77	60.6	72.5	45.0	45.0	28
September	29.82	55.4	72.0	40.2	40.2	30
October	29.82	46.7	64.0	31.2	31.2	32
November	29.97	33.9	53.0	20.0	20.0	34
December	29.87	28.6	52.0	0.2	0.2	36

Belle Isle, latitude N. 51° 53', longitude W. 55° 22'.

1895.	Mean pressure.	TEMPERATURE.			Rain-fall.	Fair days.
		Mean.	Max.	Min.		
January	29.98	17.8	35.0	-15.0	0.14	15
February	29.93	17.7	34.0	-8.0	0.16	17
March	29.60	19.4	38.0	-5.0	0.18	19
April	30.11	30.3	58.0	9.0	0.37	22
May	30.15	35.3	47.0	12.0	1.97	22
June	30.28	42.2	61.0	32.0	3.63	20
July	30.12	56.3	68.0	40.0	2.63	21
August	30.10	55.7	69.0	40.0	11.48	18
September	30.14	48.0	66.0	27.0	1.71	18
October	30.04	40.1	67.0	27.0	4.15	18
November	30.03	26.4	41.0	8.0	2.50	18
December	30.01	19.2	37.0	-9.0	0.01	22

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52° 42'.

TEMPERATURE.		Rain- fall.	Fair days.
Max.	Min.		
4.0	3.0	3.23	16
3.0	0.0	4.75	19
3.0	13.0	8.19	14
3.0	19.0	1.71	22
4.0	32.0	2.97	16
4.0	32.0	3.60	15
3.0	44.0	3.61	18
3.0	33.0	3.47	17
4.0	35.0	9.02	13
3.0	19.0	5.38	15
3.0	10.0	5.40	11

Longitude W. 58° 27'.

0.3	5.0	-----	-----
3.0	4.2	-----	-----
3.3	5.0	-----	-----
3.5	6.3	-----	19
40.3	13.2	-----	20
47.2	35.3	-----	-----
2.5	45.0	-----	-----
2.5	45.0	-----	-----
72.0	40.2	-----	-----
44.0	31.2	-----	-----
33.0	26.0	-----	-----
32.0	0.2	-----	-----

55° 22'.

35.0	-15.0	0.14	15
34.0	-8.0	0.10	16
39.0	-5.0	0.18	17
38.0	9.0	0.37	22
47.0	13.0	1.97	22
51.0	32.0	3.63	20
58.0	40.0	2.63	21
69.0	40.0	11.43	18
55.0	37.0	1.71	18
37.0	27.0	4.15	13
41.0	8.0	2.50	16
37.0	-9.0	0.01	22

There is nothing in the climate to interfere with agriculture. Flowering plants and ferns grow in vast variety, and wild grasses and clover luxuriantly. Garden vegetables and berries are abundant. The tardy arrival of spring has no serious effect on vegetation, which here, as in Nova Scotia, advances with rapid strides after commencement. Autumn, generally the finest season, frequently reaches to November, and the winter, setting in about the beginning of December, lasts until the middle of April, with snow lying almost continuously during that period.

On the west coast the climate is much more genial than on the southern and eastern shores, and vegetation is more abundant. In the interior the summer temperature is higher than that experienced on the seacoast. The average annual rainfall is 58.3 inches.

Labrador.—The climate on this coast is extremely severe, the mean temperature of the year being below freezing point, so that vegetables are only raised with great difficulty, and rarely reach maturity; but at the heads of the deep inlets vegetables, flowers, and even cereals are grown. Frost may occur at any time of the year, and snow was experienced in the neighborhood of Indian Harbor in July, August, and September of 1875.

When the direction of the wind is from seaward the temperature falls considerably during the summer months. Large patches of snow, 5 or 6 feet deep, were lying in the valleys along the whole coast in the middle of July, 1875, and some of them had not disappeared when the first large fall of snow occurred in September. The mean temperature of the air for the coast between Cape Porcupine and Nain was 46.5° in July, 50.3° in August, and 44.5° in September, found by taking the mean of the highest and lowest temperatures observed each day.

Winds.—Meteorologically considered, the region under discussion occupies a unique position. In the first place, it lies immediately to the southwest of the area of constant low barometric pressure, which extends from Baffin Bay on the west to Iceland on the east; in the second place, it lies immediately in the path followed by the centers of those temporary moving barometric depressions which originate in the interior of the North American Continent and travel eastward with an irregular velocity until they either disappear by filling up or lose their identity by coming within the limits of the permanent low. As a consequence of the first condition, the barometric gradient or slope over the region being to the northeastward, the prevailing direction of the wind is to the west of NW. As a consequence of the second condition, these prevailing winds are subject to constant interruption by the wind systems proper to the approach and passage of each of these temporary areas of low pressure, the wind at any station in advance

of such an area invariably going to south or SE., shifting to westward as the cyclonic center passes, the shifts taking place through the north (backing) if the point of observation lies to the north (left hand) of the storm track, through the south (veering) if it lies to the south (right hand) of this track.

Along the coast of Newfoundland the prevailing winds are thus from the westward, subject to interruption with the approach of each of these occasional low areas; and as these occur during the winter (November to April) with far greater frequency than during the summer (May to October), the winds of the latter season are the more uniform, both in force and direction.

The following table, compiled from the Monthly Weather Review of the Dominion Meteorological Service, gives for the months of January and July the average percentage of winds coming from each point of the compass at several stations throughout the island:

	No. of years.	N.	NE.	E.	SE.	S.	SW.	W.	NW.	Calms.
St. John's -----	5	23	18	7	8	14	5	16	10	0
July -----	5	9	10	5	7	24	13	30	2	0
Channel -----	3	10	6	8	15	8	5	23	23	3
July -----	(4)	2	3	10	42	6	7	22	6	4
Cape Norman -----	3	4	31	4	7	2	10	5	33	0
July -----	3	5	11	6	15	8	3	11	48	0
Point Rich -----	1	36	22	3	1	3	3	6	18	0
July -----	1	9	21	6	4	8	8	48	1	0
Belle Isle -----	(1)	5	9	14	21	5	16	14	18	0
July -----	(1)	6	0	22	25	5	12	26	4	0

The order of the weather changes during the approach of one of these barometric depressions is almost invariable. After a period of stationary barometer, accompanied by light winds, the mercury starts to fall, the wind goes to the eastward with rain or snow, and a period of thick, foggy weather sets in. About the time of lowest barometer the SE. wind shifts to the SW. and then to the NW., blowing with storm force. The former shift is sometimes sudden, the first squall often coming with extra violence, and shipmasters lying off the coast should exercise corresponding watchfulness. The rise of the barometer is accompanied by overcast, squally weather and storm winds from SW.-NW., moderating and clearing about the time the mercury attains its highest point.

The following extract from the log of the *St. Georgios I.*, off Cape Race, November 30-December 3, 1898, will serve to exemplify the character of the weather changes in the southern semicircle of

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Monthly Weather
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stations through-

SW.	W.	NW.	Calms.
5	14	10	0
13	30	2	0
5	23	23	3
7	25	6	4
10	6	23	0
3	11	43	0
3	6	13	0
8	46	1	0
16	14	13	0
12	26	4	0

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St. Georgios I., off
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one of these eastward-moving depressions. The Beaufort weather notation is employed throughout:

Date (1896).	Hour.	Barom- eter.	Wind.		Temper- ature of air.	Weath- er.
			Dirac- tion.	Force.		
November 30	4 p. m.	29.54	SSE.	7	59°	o
	8 p. m.	29.50	SSE.	8	48°	f
	12 p. m.	29.10	SSE.	7	60°	f
	4 a. m.	28.99	SSE.	7	46°	f
	8 a. m.	28.87	SSE.	5	45°	f
December 1	9 a. m.	28.71				
	Noon.	29.10	WSW.	9	48°	f
	2 p. m.	29.22	WSW.	10	46°	o
	4 a. m.	29.58	WSW.	10	46°	oq
December 2	Noon.	29.69	W.	10	46°	oq
	2 p. m.	29.81	W.	10	48°	oq
December 3	4 a. m.	30.24	WNW.	8	43°	b
	Noon.	30.28	NW.	5	46°	b

The easterly winds proper to the forward half of these depres-
sions are accompanied by rain (or snow), which is liable to con-
tinue for twelve hours succeeding the time of lowest barometer.
The NW. winds bring clear weather.

Westerly winds generally diminish in strength at sunset, but on
those occasions when they steadily prevail until midnight it fre-
quently occurs that the winds change to NNE. in the following
morning.

At the entrance of most of the harbors the wind is generally
uncertain in its direction, and frequent squalls are experienced,
which at times are so heavy that great caution is necessary when
approaching in a vessel under sail, and it is advisable that steam-
ers on such occasions should have steam ready.

Fogs occur at all seasons of the year, but are most frequent dur-
ing the months of May, June, and July; they are more prevalent
on the south and east coasts than elsewhere, and seldom extend
far inland. With easterly winds they almost constantly prevail;
with westerly winds they are not so frequently experienced, and
are then of short duration. On the west coast fog is of compara-
tively rare occurrence.

Along the eastern shore of the island the periods of fog are
invariably accompanied by easterly winds, and in general by east-
erly winds tending to back, the fog lifting as soon as the wind
reaches NW. Along the southern shore, as also in the neighbor-
hood of Trinity Bay, fog prevails likewise with southwesterly
winds, the weather clearing only when the wind blows from a
point between N. and NW. Along the southern coast, therefore,
the fogs are frequently of long duration, especially during the
summer months.

The following table, compiled from the Monthly Weather
Review and from the reports of Lighthouse keepers along the

coast, gives for each month the average number of days upon which fog occurred during the five-year period 1894-1898:

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Belle Isle.....	10	4	13	7	10	17	22	13	8	10	10	10	134
Cape Norman.....	1	0	2	0	6	8	13	8	6	1	0	0	45
Gull Island.....	3	1	4	6	12	13							
Cann Island.....	2	1	1	2	6	4	2	3	1	2	2	1	27
Wadham Island.....	2	1	3	2	9	7	4	5	2	3	3	2	43
St. John's.....	2	2	3	3	8	5	4	4	2	4	1	1	39
Cape Race.....	9	4	6	7	15	18	25	12	9	8	5	6	124
Cape St. Mary.....	10	6	12	9	24	19	22						
Channel Head.....	1	1	0	2	8	6	9	6	6	2	0	0	41
Point Rich.....	0	0	4	1	4	4	7	4	1	2	0	0	27
Point Amour.....	0	1	0	1	4	7	12	9	4	0	0	0	38

The records upon which the above table is based are incomplete, notably at Belle Isle, where the observations of a single year (1895) only were obtainable. During the year 1897 at this station the duration of fog throughout the six months June-November, was: June, 200 hours; July, 288 hours; August, 314 hours; September, 100 hours; October, 160 hours; November, 140 hours. At Cape Race, 1896, the amount of fog from May to July was, May, 120 hours; June, 400 hours; July, 404 hours.

The fog throughout the Strait of Belle Isle never lifts, but always clings closely to the water. This appears to be due to the low temperature of the water itself. The best clearing wind is from the north, and as the northern side of the strait is thus the first to clear, vessels will obtain any advantage there is to be had by keeping close to that side of the strait.

The fogs that occur in calms, especially after strong winds, are frequently so dense as to conceal a vessel even when within hailing distance. These fogs usually do not extend to any great height, so that when objects are hidden at even 50 yards from the deck of a vessel, they can be seen when the rigging is ascended 50 or 60 feet. Such fogs occasionally last ten days. The fogs that prevail with easterly winds extend high above the sea, and can not be overlooked from the masthead of a vessel; occasionally they admit the land or other objects being distinguished at $\frac{1}{2}$ mile in the daytime.

When within sight of land, the usual effect of fog is that of causing estimations of distance to be erroneously in excess. No great reliance should be placed upon an assumption of position depending upon the distance at which the sound of surf breaking on a rocky shore can be heard, but on many portions of the coast where steep cliffs extend to the shore, the proximity of a steamer to them may be detected by the echo of the whistle.

number of days upon
period 1894-1898:

Aug.	Sept.	Oct.	Nov.	Dec.	Year.
3	8	10	10	10	134
0	0	1	0	0	46
3	1	2	2	1	27
0	2	3	3	2	43
4	2	4	4	1	39
2	9	8	5	0	124
2	6	2	0	0	41
6	1	2	0	0	27
4	4	0	0	0	38

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Currents.—Two currents are most deserving of record in the vicinity of Newfoundland: (a) The Gulf Stream, (b) the Labrador Current.

Gulf Stream.—The Gulf Stream, after passing along the coast of the United States, is deflected to the eastward between the parallels of 35° and 40° N., and continuing on in about an ENE. direction (true) passes south of the tail of the Great Bank of Newfoundland during the winter months, but extends over the south extreme of that bank during the summer season.

The Gulf Stream not only has an oscillatory motion, so that it is impossible to assign any definite limits to the margins of this great ocean river, but spreads out, like the delta of a river, into lanes of warm water with colder water between.

The velocity of the Gulf Stream across the south extreme of the Great Newfoundland Bank is very variable, but at times amounts to more than one knot an hour in an ENE. direction (true). One result of this influx of warm water into a cold atmosphere is the production of the dense fogs so frequently experienced on the banks, which materially embarrass and retard navigation.

Labrador, or Arctic Current.—The cold ice-bearing current from the Arctic seas, passing to the southward, along the coast of Labrador, at rates varying from 10 to 36 miles a day, and occasionally ceasing altogether, is named the Labrador Current; it is very much influenced near the coast by the winds, reaching its maximum rate after those from the northward; its average rate is 11 miles per day. It is difficult to estimate the direction or effect for any particular day, but the general trend is to the southward, as shown by the passage of many icebergs; these, however, have been observed to travel north without any apparent reason.*

The Labrador Current does not attain any great velocity within 20 or 30 miles of the coast between Cape Bonavista and Cape Spear; it appears to skirt the north side of Fogo Islands and extends out to Funk Island, thence taking a southerly direction; it often binds the field ice into Notre Dame and Bonavista Bays and the mouth of Trinity Bay.

A current, running from the NW., splits about 2 miles off Fogo Head; the main branch sets close along the north shore of Fogo Island and amongst the rocks and islands around it from $\frac{1}{2}$ to 1 $\frac{1}{2}$ knots an hour. It is much influenced by the wind, being accelerated by northerly and retarded by southerly winds, while before easterly gales it sometimes runs to the NW. This current, after

*On the 15th day of October, 1896, two large steamers, bound from Great Britain to Baltimore, were wrecked about 20 miles south of St. Johns, owing to a supposed reversal of the Labrador Current following a hurricane which had passed two days previously.

passing Round Head, takes the direction of the coast and is influenced by the tidal stream, the ebb accelerating and the flood retarding it, but only occasionally, at spring tides, stopping its southerly course entirely.

The western branch of this current runs between Change and Fogo Islands at the rate of about $\frac{1}{2}$ knot an hour, but is lost before arriving at Stag Harbor Tickle.

It has been observed that when the current is setting strongly to SW. down the coast between Cape St. Francis and Cape Race a strong eddy will be found running to the northward about one mile offshore after rounding Cape Spear. This forms an element of danger to ships bound to St. Johns in a fog, and should be remembered.

Admiral Cloué remarks on the currents and tides generally around Newfoundland that "they are subject to anomalies of which the causes are unknown. On the east coast, for example, where the current goes generally to the southward, it sometimes happens that for a day or two the direction is reversed, and the current runs to the northward even against the wind."

Caution.—Seamen should be on their guard against an indraught among the Fogo and Wadham Islands into Sir Charles Hamilton Sound, Bonavista, Trinity, and Conception Bays. With easterly and NE. winds this indraught is very strong, and these winds are generally accompanied by thick weather.

From observations and from information received on the subject, a vessel in running her distance off the northern Labrador Coast should make allowance for a southerly current of 12 miles in the 24 hours. Owing to its irregularity not more than half that amount will probably be experienced, on the average, in the offing, but close to some of the headlands the current for a short distance runs with a velocity of 2 knots an hour and possibly more.

Tidal Streams.—Labrador.—Near the shore, as a rule, the flood stream runs to the northward and ebb to the southward, following the line of coast and rarely attaining a velocity of $\frac{1}{2}$ knot an hour.

Current on the South Coast of Newfoundland.—Between the Great Bank and Newfoundland the current commonly sets to the WSW., occasionally at a rate of nearly one mile per hour; it is not always so; and near the shore, in moderate weather, it even changes with the wind. At these times during the flood it runs to the SW., and during ebb to the NE., the former being the stronger.

Westward of Cape Race the current frequently sets to the NW. at the rate of about one mile per hour in the offing, but it is not invariable in strength or direction, and is liable to be affected greatly by the prevailing wind. It is observed generally to run

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in upon the eastern side of the great bays indenting the south coast of Newfoundland, and out on their western side. In the offing it is influenced by the winds, and near the shore by the tidal streams, so that, during springs, the stream of ebb runs weakly to the SE., and the stream of flood to the NW., the latter sometimes at the rate of 2 knots round the headlands.

Upon this shore many wrecks have occurred in foggy weather, caused doubtless by the indraught which prevails.

Over the banks southward of Newfoundland, during South or SW. breezes, there is a strong set to the north, which is still stronger during and after a NE. wind.

A current to the southward has at times been experienced on the above banks, but it is an exception, and no danger need be apprehended from it.

A set of 30 miles in 24 hours to the northward has frequently been experienced in this neighborhood, at times at a distance of 50 miles from the coast. The importance of taking soundings can not too strongly be urged on the seaman, especially when making the passage from Cape Breton to Cape Race.

Admiral Cloué, of the French Imperial Navy, during his survey of the Banquereau Bank, remarks that "he observed the currents to be very irregular in strength and conditions, for they sometimes change all round the compass in 24 hours, and have been known to set in a contrary direction to the prevailing wind." The ordinary strength of a current is about $\frac{1}{2}$ knot; but it occasionally attains a velocity of more than 2 miles an hour. The fact of the transportation of field ice from the north to the latitude of 42° N. indicates the certainty of a current ordinarily setting to the SW., but not necessarily always on the surface.

Caution.—Sailing vessels should be careful to keep a good offing, as the wind often falls light near the shore, and the drift of the sea and current are nearly always toward the land, especially near Placentia and St. Marys Bays. On the eastern side of Trepassey Bay the current has been recorded to run 2 knots an hour to the northward.

Currents in Cabot Strait and on the West Coast of Newfoundland.—On the south coast of Newfoundland, between St. Pierre Island and Cape Ray, the current makes to the westward and passes around Cape Ray into the Gulf of St. Lawrence. This was found to be the case at the stations off Cape Ray when observations were taken by the Canadian Department of Marine in 1894 and 1895, and it is also shown by the movement of icebergs off St. Pierre Island, which make westward even against a NW. wind. The experience of masters of vessels and of fishermen

frequenting these waters likewise confirms the results of the observations, and goes to show that the current is distinctly felt for a distance of 8 or 10 miles out, and may sometimes occupy one-half of the width of Cabot Strait. There can be no doubt, therefore, that this is the usual current on the Newfoundland side of the strait, and that it is this which makes up for the water which leaves the Gulf in the outward current around Cape North.

There is, however, evidence to show that the inward current past Cape Ray is not constant at all times. There are instances of sealing schooners in the ice about the month of March which drifted in the opposite direction past Cape Ray. As long, however, as the water remains open, and free of drift ice, an inward current may be inferred. The evidence goes to show that when there is ice in the offing of St. George Bay and off Cape Ray it comes from the opposite direction, with the general current which makes across the Gulf from Gaspé to Cape North, and at times when this current, or a branch of it, is driven farther to the eastward than usual. The ice is thus brought there under conditions which make it an indication of disturbance in the current.

As a rule, there is no appreciable current off St. George Bay, and very little from Cape St. George to the Bay of Islands. From the Bay of Islands to Rich Point the current becomes distinct, and runs along the coast to the northeastward. It is stated by Lieutenant Margesson, navigating lieutenant of H. M. S. "*Buzzard*," stationed on this coast for three years, that the current during the summer season is always in this direction when it is felt at all, and that it usually amounts to one knot; and by Lieutenant Petty, navigating lieutenant of H. M. S. "*Pelican*," that there is an almost constant current running northeastward along this coast between Cape St. Gregory and Rich Point, which is only intercepted by the flood and ebb tides running in and out of the larger bays on the coast.

The fishermen on this coast state that the prevalent direction of the current is about NE. by N., parallel to the shore; that it will run constantly in that direction for three or four days together; and that on the whole it has that direction for rather more than two-thirds of the time. For twelve to twenty hours before the arrival of a southwesterly gale, it sets more strongly in its usual direction, and before a northeasterly gale it slacks, although this is not so certain an indication of wind, as it may also slack at other times. With long continued easterly winds it may be reversed in direction. It may also set directly off or on shore for three or four hours, or even longer.

The current is stronger near the shore and weaker farther out, as it is found that a schooner going westward will make better headway with long tacks, but if going eastward, with short tacks inshore.

Flat ice, about six feet in thickness, appears off Bonne Bay about January or February, and remains till March or April. This ice serves to indicate the usual direction of the current on this coast, as it drifts northeastward in one day as far as it drifts southwestward in three days, with the same amount of wind one way or the other. A schooner caught in the ice off Cape St. George at the end of March drifted along the coast as far as St. Barbe in about ten days, a distance of about 190 miles, giving an average rate of about one knot. This ice sometimes makes to the eastward all the way through the Strait of Belle Isle. In March, 1896, two schooners caught off Bonne Bay drifted with the ice eastward through the strait, and were carried down the Atlantic side of Newfoundland to Notre Dame Bay.

Between Rich Point and the entrance of the strait the current becomes tidal, and does not usually make in one direction more than the other on the whole. The ice may make a considerable drift when the wind is with the current, but when against it the ice stands and shoves.

Currents in the Strait of Belle Isle.—There has been a widespread impression that the current in the Strait of Belle Isle runs constantly inward, the statement being generally made that a branch of the Labrador Current flows through the strait into the Gulf of St. Lawrence and again enters the Atlantic in a southeasterly direction between Cape Breton Island and Newfoundland.

A recent investigation of the currents of this region by the Canadian Department of Marine has shown that the current in the Strait of Belle Isle is fundamentally tidal. The best comparison between the current, as observed at a station 6 miles east of Amour Point and $2\frac{1}{2}$ miles off shore, and the tide, as recorded by a self-recording tide gauge at Forteau Bay, showed a complete correspondence between the two, especially in moderate weather and during the prevalence of moderate westerly winds. On such occasions there were several days during the period of observation when the current ran east and west for an equal length of time in each direction, and turned regularly with the rise and fall of the tide.

During the period of greatest regularity the current ran inward from the east during the rise of the tide with a velocity ranging from 1.02 to 2.04 knots per hour, and would either stop at high water or still continue to run inward for some time after. The greatest length of time after high water during which it was observed to run inward was two hours and fifteen minutes. The current then turned and run outward from the west during the fall of the tide with a velocity ranging from 0.92 to 1.81 knots per

hour, and would continue to run in that direction for a length of time after low water, which varied from forty minutes to two hours and fifty-five minutes. The greatest velocity of the current in either direction under ordinary conditions of tidal regularity did not exceed 2 knots per hour, the inequalities of the current corresponding with the diurnal inequality of the tides themselves.

With heavy and long-continued winds, the current would run for a longer time with it and a shorter time against it, and would eventually run continuously in the same direction as the wind, with a fluctuation in velocity corresponding to the tide. The most marked example of a persistent current running out of the strait occurred from Monday, July 16, to Thursday, July 19, 1895. During these three days the current (as observed 3 miles off the north shore) ran in from the east for only five hours, and out from the west for nineteen hours each day. The maximum velocity of the current from the east was 1.38 knots; from the west 2.44 knots. The best example of a current running in through the strait from the east occurred from Wednesday, September 5, to Saturday, September 8, 1895. All the indications concurred in showing that the current ran continuously in the one direction during these days, although the observations were much interrupted by bad weather. The current then varied from a minimum of 0.54 knot to a maximum of 3.15 knots in one direction.

The general characteristics of the current may be set down as follows:

1. The current is fundamentally tidal in its nature, and under normal conditions it runs east and west with velocities which are nearly equal. It attains at times a velocity of 2 knots per hour in each direction.
2. The conditions are normal in moderate weather and during the prevalence of moderate westerly winds.
3. During heavy winds, especially when easterly or westerly in direction, the current which runs with the wind becomes stronger than the current against it, and eventually the current may come to be continuous in the same direction as the wind.
4. The greatest velocities of the current which were observed during heavy winds (in the months of July and September, 1895) were as follows: From the east, 3.15 knots; from the west, 2.50 knots per hour.

A complete account of the currents in the strait of Belle Isle is given on the Pilot Chart of the North Atlantic Ocean for March, 1897, and of the current circulation in the Gulf of St. Lawrence on the Pilot Chart of the North Atlantic Ocean for July, 1897.

Ice.—From the 1st of January until the end of May, entrance into the bays and harbors of Newfoundland and Labrador is rendered

difficult and almost impossible by the presence of ice. Throughout this period navigation is practically suspended.

The ice encountered at this season in these waters is of two varieties—first, that of local formation, the rigorous climate of the region sufficing to freeze over every sheltered harbor for a certain portion of the year; second, northern ice, or that formed in higher latitudes and brought hither by the action of the Labrador Current. The latter appears in two forms—field ice, consisting of flat pieces of ice several feet in thickness, and often of considerable extent, and bergs, or isolated mountains of ice, reaching in height from one to two hundred feet or more, and with bases covering an area of several acres.

Regarding the local ice, the date of its formation depends upon the position of the place in question, and largely upon the season. St. Johns Harbor, for instance, rarely freezes over. Toulinguet Harbor, on the other hand, froze over every year from 1867 to 1886, the earliest date of its closing during the period being January 1, 1868, the latest February 20, 1879. The earliest and the latest date of opening throughout the same period were April 15, 1879, and June 4, 1884, respectively.

The usual time of freezing is, in Labrador, the month of November, and in the south of Newfoundland, the middle of January, while the period of the ice breaking up is, in Labrador, the end of June, and in the south of Newfoundland the middle of April. Intermediate ports vary in time, according to position. It is to be observed, however, that the times of freezing or opening vary greatly in different years, depending on the severity or comparative mildness of the winter season.

Let us now turn to the consideration of the second and more important variety of ice—that derived from higher latitudes.

The first of this ice to make its appearance upon the coast is what is known as the white or northern slob. This white slob is the surface ice which is formed to the north and east of Labrador during the early winter months, and is crushed up by the wind and sea and built upon as it journeys south. It is usually found in masses several miles in extent and varying from 3 to 10 feet in thickness.

The main body of the slob is brought down from the north by the Labrador Current, and continues along the coast, filling the harbors and bays of Newfoundland as it advances. From the lookout of Aillik, on the coast of Labrador, in latitude 55°, the northern slob is observed each year, about the 10th of December, as a narrow stream 5 to 8 miles in width, moving southward. This body gradually widens until January, and it may then be 12 to 15 miles in width. About the first or second week in January the

sheet ice begins to take the place of the slob, and continues to flow southward in the same manner. It is more dense and solid than the slob, but not so thick, except in places where rafting has taken place, and here it may stand from 5 to 20 feet above the water. Isolated bergs are also seen about this time.

The arrival of the slob at St. Johns may be expected from January 15 to February 1. It is often seen 5 to 15 miles distant, drifting to the south, for days before it closes in to the shore, or obstructs navigation, and vessels ill adapted for contending with ice have frequently reached St. Johns by rounding the southern tail and approaching Cape Race from the SW. The breadth of the early slob passing Cape Spear varies in January from 40 to 60 miles, but it rapidly increases. For February the average is 80 to 130 miles. This, however, is far exceeded in seasons of heavy sheds, when a breadth of 250 to 300 miles is often attained, carrying the ice as far east as 45° W. This extreme breadth is, however, by no means uniform, as the ice, having little depth, is blown along by the wind, and the eastern edge of the main body is deeply indented by bays and prolonged by capes. The main body of the ice itself is intersected by leads and open areas, and is compact or loose, according to the direction of the wind, easterly winds (NE. to SSE.) serving to unite the ice and to drive it in a solid mass upon the Newfoundland Coast, filling Notre Dame, Bonavista, and Trinity Bays so that no water can be seen; westerly winds, especially southwesterly, serving to disperse it, a single night of the latter wind often emptying the bays and carrying the stream out of sight to seaward. Between the end of March and the middle of April, during ordinary years, the ice swings off to the eastward, owing to the failure of accessions from the north and the increasing prevalence of westerly winds. After this date strings of field ice may at times be seen making their way down the coast, occasionally in May, and rarely in June. These, however, are for the most part derived from Trinity Bay and Bonavista Bay, and are not part of the regular northern stream.

The voyage of the ice southward from the Arctic has been traced by actual experience. On October 14, 1871, Captain Tyson and a party of nineteen others were separated from the U. S. S. *Polaris* in latitude 77° or 78° N., just south of Littleton Island. Unable to regain their ship, the whole party remained on the floe, and accomplished one of the most wonderful journeys on record. After a drift of over 1,500 miles, fraught with danger from beginning to end, and threatened with death, not only by starvation and exposure to cold, but also by the numerous gales encountered, supporting themselves by hunting and fishing, they were finally rescued April 30, 1872, by the sealing steamer *Tigress*, near the Strait of

Belle Isle, in latitude $53^{\circ} 35' N.$, and carried safely into port. No better example than this could be given of the drift from the Arctic Basin, illustrating, as it does, not only the journey to the southward, but also the many vicissitudes to which the ice is subjected before reaching a low latitude.

The fields of ice encountered to the eastward of the Grand Banks are in general detached masses, due either to a temporary diversion of the stream or to the separation of fields of limited area from the main body, the primary cause in both cases being the prevalence of heavy westerly gales. During February these detached fields are reported most frequently north of the 45th parallel, and between the meridians of 46° and 49° . The quantity of this early ice depends, to a large extent, upon the character of the early winter months in the higher latitudes in which the slob is formed. If November and December are mild, the quantity will be slight; such was the case in the winter of the years 1891-92, and of 1894-95, the latter having been, according to the reports of fishermen and lightkeepers, the mildest winter for many years past. The quantity of bergs, or true Greenland ice, reported during the following spring and summer is, on the other hand, quite independent of the severity of the winter.

The destruction or wasting away of the slob and field ice in short periods is very remarkable. It appears to melt away very rapidly after April. A vessel may be beset in the evening, and by morning all will have disappeared. The ice in strings forms an excellent shelter for vessels hove to in a gale, and is constantly used for this purpose, but these breakwaters may be crushed up and destroyed in a single night.

After the month of May, heavy bodies of northern or Arctic ice are seen moving to the southward every year throughout June, July, and sometimes throughout August. It is variable in quantity and breadth, but forms a constant obstruction from Indian Tickle, on the coast of Labrador, to the Fogo Islands. The stream generally breaks in July.

The bergs which follow the slob and field ice are detached portions of the true polar ice, formed upon the land, and carried down to the sea by glacial action, the glaciers performing for these frigid regions the same function as that performed by the rivers of the temperate latitudes, viz, serving to distribute the excess precipitation. From the frozen interior of the Arctic Continent these rivers of ice make their way through valley and gorge to the shores of the ocean, and even beyond, the face of the glacier being thrust forward into the sea by the enormous pressure in the rear until the buoyant effect of the water upon the submerged portion is sufficient to detach it from the main body, and the huge fragment becomes

a floating island or mountain of ice, which is borne away by the prevailing currents. The onward progress of the glaciers varies, the highest velocity yet observed being in the case of those along the west coast of Greenland. That of the Fjord of Jakobshaven, in $69^{\circ} 22' N.$, amounts to about 50 feet per day, and it has been computed that this glacier alone contributes to the sea from one to $1\frac{1}{4}$ cubic miles of ice annually.

The thawing process alone, occasioned by the increased temperature of air and water during the polar summer, would scarcely suffice to reduce these enormous masses of ice to the size usually observed. Their disintegration is brought about ordinarily from within. Even in its original condition the surface of the glacier ice is wrinkled with chasm and crevasse, penetrating more or less deeply into its interior. The deepest of these depressions collect the water due to the melting of the upper part of the berg until they overflow. A fall in temperature occurs, the surface of this water, and later its entire volume, is converted into ice, and the tremendous expansive force of this change is amply sufficient to shatter the mass of the berg.

Once beyond the limits of the polar regions, the process of dissolution is rapid. The berg, always heated upon its southern side, is in unstable equilibrium, and by reason of its frequent topplings, constantly exposes a new surface to the action of the sun's rays. Under these conditions its ultimate annihilation is a matter of a comparatively short time.

The icebergs seen off the Grand Banks frequently exceed a height of 200 feet, and are of such extent and occur in such numbers as to constitute, with their attendant fogs, the most dangerous of all the obstacles with which the navigator of the North Atlantic has to contend. Their frequency in different years varies in a wholly inexplicable manner, certain seasons—as, for instance, 1882, 1890, and 1896—being notable for their extraordinary abundance, while during the years 1886, 1888, and 1895 the number observed was far below the average. June is the month during which they are most numerous along the transatlantic route.

The southern limit of the occurrence of berg and field ice on the Grand Banks varies from month to month and from year to year, and it is therefore only possible to sketch it in general outline. On the route to and from Europe, ice is most frequently encountered between $45^{\circ} W.$ and $55^{\circ} W.$, and north of the 41st parallel. Its most easterly position was recorded in July, 1890, when a berg was seen in $24^{\circ} 11' W.$, $48^{\circ} 53' N.$ Bergs have been seen in as low a latitude as $39^{\circ} N.$, and in position to attain which the extension of the Gulf Stream must have been crossed. Such phenomena have been attributed to the warm waters of the Gulf Stream overrunning

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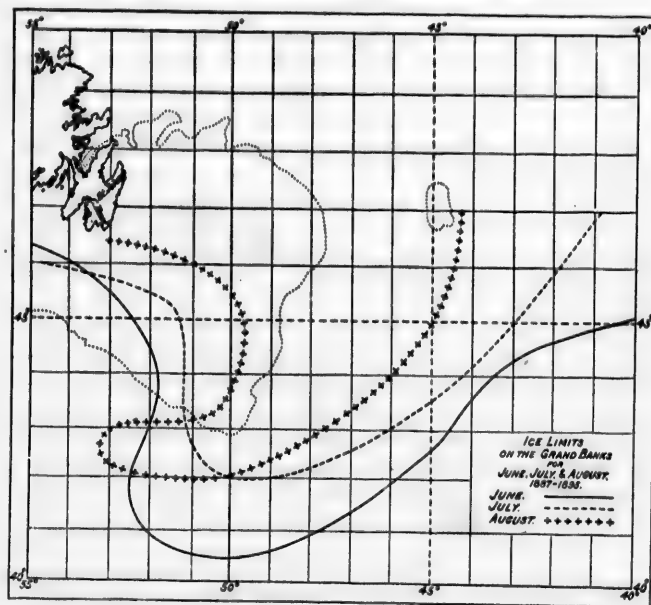
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The diagram on opposite page shows the limits within which ice was observed during the months of June, July, and August according to the reports received by the United States Hydrographic Office from vessels during the period 1887-1895. It should here be remembered, however, that the observing vessels followed, in the main, well-beaten tracks, and that the outline of the actual area may be very different from that shown by a summary of the reports.



The season during which vessels are liable to encounter ice on the voyage between the Channel and the northern ports of the United States thus extends from February to August, the reports reaching a maximum frequency during June and July. Isolated bergs, however, may be sighted at any time, and consequently a good lookout is always necessary. No reliance can be placed on any warning conveyed by diminution of temperature, either of air or sea, on approaching ice; but, even during fog, or on dark nights, a peculiar whitening, known as "ice blink," may generally be observed when nearing icebergs, and occasionally the sea, breaking against the base of a berg, may give warning of its proximity, but

no rule can be laid down to insure safe navigation, as the position of ice differs in different seasons; everything depends on the vigilance, caution, and skill of the navigator when crossing areas in which ice prevails.

Vessels should, if possible, always pass to windward of icebergs to avoid the loose ice floating to leeward.

Vessels bound to the Gulf of St. Lawrence or Halifax either endeavor to make Cape Race by passing north of the Virgin Rocks, or, in order to avoid the ice, cross the banks on the parallel of 44° N., hauling up on their proper course when past longitude 55° W., as heavy ice is seldom seen to the westward of that meridian.

The vicinity of St. Pierre, Miquelon, is generally free from ice after the middle of April, and sometimes during the whole year.

Ice in Cabot Strait.—This strait is never frozen over, but vessels built in the ordinary way can not navigate it in safety between January 1 and May 1 on account of the heavy drift ice, and frequently not till later on account of the block caused by what is locally known as the "Bridge."

Gulf or river ice usually begins to flow through the strait early in January, the ice being thin, but increasing to 4 feet in thickness. Small icebergs 10 to 18 feet in height occasionally pass through the strait, but a large berg is seldom seen. The ice continues to flow through till May, according to the winter.

Nearly every year the great rush of ice out of the Gulf of St. Lawrence in the spring becomes blocked between St. Paul Island and Cape Ray, and this sometimes lasting for two or three weeks, and completely preventing the passage of ships, is named the Bridge. It is recorded that three hundred sail have at one time been detained by this obstacle, and many wrecks have occurred in consequence on the Newfoundland coast. The usual time of the formation of the "Bridge" is between the middle of April and the middle of May.

The wind between NE. and south opens the Newfoundland coast, and the strait often clears rapidly with winds between NW. and NE. In 36 hours very little ice may be seen from Cape Ray, whereas SW. and West winds block it, the former forcing up the ice from between Magdalen Islands and Cape Breton Island to combine with the main stream running southeastward.

Sealing steamers endeavor to pass through Cabot Strait at all times, but are occasionally fast in the ice for days together.

Ice Report Stations.—Information as to ice, wind, temperature, and weather indications may be obtained during the months of April and May, by communicating with the signal stations on Capes Ray and Race and at Galantry Head, St. Pierre Island.

West Coast of Newfoundland.—The stream of ice setting out of the St. Lawrence River appears to split on Cape George, the main stream passing into St. George Bay and toward Cabot Strait. The other portion is generally carried by a NE. set, as, from the bay of Islands and Bonne Bay, the ice is reported to generally travel in that direction. This current is stated to be strongest during the months of March and April.

The northern ice, after its passage through the Straits of Belle Isle, and generally entering the Gulf of St. Lawrence about the 9th January, can not, at present, be followed. It may arrive off Bonne Bay during January or February, or it may be driven on to the Labrador Coast, all depending on the winds.

A NW. wind closes the Newfoundland coast; SW. winds open a lane of water inshore, and winds between SW. through south to ESE. clear the coast to Cape St. George.

The gulf ice usually clears off the west coast of Newfoundland between the end of April and middle of May, but in cold seasons it may remain much later.

Ice in Belle Isle Strait.—Local slob ice is apt to form early in December, followed shortly by the formation of sheet ice a foot thick or more. The date of the arrival of the northern ice depends largely upon the character of the winds, those from the east and NE. driving the stream of northern slob into the strait, those from west and SW. keeping it offshore. During only one season for many years past, however, has it failed to appear in enormous quantities, the season mentioned being the exceptionally mild winter of 1894-95. The strait frequently remains sufficiently open for navigation during the entire month of December, but is little used during that month by ocean-going vessels, as navigation in the St. Lawrence River closes in November.

The following table gives for the last six years (1893-98) the date of the formation of the first local ice, and also the date of the arrival of the first considerable number of bergs:

	Local ice.	Bergs.
1892-93.....	December 23	February 28.
1893-94.....	December 3	April 7.
1894-95.....	December 23	February 13.
1895-96.....	December 11	January 16.
1896-97.....	December 2	March 28.
1897-98.....	December 3	

The date of the passage through the strait of the first and the last seagoing steamer for several years past is as follows:

	First.	Last.
1892.....	June 16.....	November 22.
1893.....	June 26.....	November 12.
1894.....	June 27.....	* November 20.
1895.....	June 17.....	November 20.
1896.....	June 21.....	* November 17.
1897.....	June 27.....	* November 16.
1898.....	* June 28.....	* November 18.

* From the Records of the U. S. Hydrographic Office.

Sealing steamers sometimes make their way through the strait during April.

Every year throughout the months of May, June, and a portion of July the Labrador Current carries to the southward, past the eastern entrance to the strait, an almost countless procession of bergs.

Easterly winds and the tidal currents bring many of these bergs within the eastern entrance of the strait, and some few even emerge at its western extremity and make their way into the gulf as far as Rich Point on the coast of Newfoundland and Mecatina Island on the Labrador side. The size of these is of course limited by the depth of the channel—35 fathoms. The keeper of the light on the island frequently reports as many as 250 bergs in sight at one time, and gives instances of bergs stranding to the eastward of the island at a point where the water is over 100 fathoms in depth. For the month of May, 1893, he reports "a heavy jam of northern field ice and icebergs, some of them the most rugged and massive pieces of ice I have seen in my 30 years on this island. I have counted 200 at one time, but owing to the heavy blockade of field ice, many of the low bergs must have escaped notice. Some of the bergs are almost like islands covered with snow, owing to the amount of earth and sand encased within them, which, melting down the sides, gives them from a distance the appearance of land." For the following summer he reports: "Following the spring the ice came into the strait by the north side and could be seen from the east end of the island up to July 15; also bringing a lot of icebergs which remained aground all along the shore among the islands of Battle Harbor. These breaking up during the summer and the tide and wind driving them across the strait (within) were very dangerous to navigation. Several accidents and narrow escapes followed; notably the *Lake Nepigon* struck a submerged piece of ice at Forteau and had to be beached, while the *Straits of Gibraltar* was a total loss. In fact,

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during foggy nights, captains were rather chary of passing through the strait. These small pieces of floe ice are all under water, and when there is any sea running are invisible. Captains of vessels bound for the Labrador coast reported that it was impossible to get into any of the harbors along the shore during the night or in foggy weather, owing to the chain of bergs that lay along the land."

In the latitude of Belle Isle and along the steamer route approaching the strait the breadth of the stream of ice rarely extends further to the eastward than the meridian of 47° , although single bergs have been seen as far east as 44° , notably during the phenomenal year of 1890. The stream ordinarily breaks in July, and during the autumn months drifting bergs are by no means so frequent. Stranded bergs ordinarily break up rapidly and disappear, but occasionally one will maintain its position and resist destruction throughout the entire winter. An instance of this was given by a berg which grounded November 24, 1896, about 7 miles west of Belle Isle light, and was still in place May 1, 1897.

The following report by Captain Wills, of the steamship *British Empire*, tells the ultimate fate of many of these bergs:

"July 21, 1896, latitude $45^{\circ} 11' N.$, longitude $47^{\circ} 46' W.$, at 11.34 p. m., in a dense fog sighted a berg 200 feet ahead and a little off the port bow, which we cleared by about 70 feet. When about three ship's lengths past it a startling phenomenon took place; a terrific crash, followed by a roar of broken water, succeeded by more crashing and roaring, getting fainter at each explosion, the whole occupying a minute and a half. We had stopped our engines with the helm hard aport, and although we were running at slow speed, I have no doubt that the ship's wash caused the berg to break up."

Passages.—With a view to reducing the risks of collisions and to the avoidance of ice and fog the principal transatlantic steamship companies sailing from Liverpool and the English Channel have adopted routes separated in the eastward and westward voyages, and adapted to the varying ice and fog conditions for the different seasons of the year. These routes have the additional advantage that in the event of a vessel breaking down, assistance is more likely to be at hand; also it may be presumed that sailing vessels will either endeavor as far as possible to avoid their localities, or at any rate keep a strict lookout when in their vicinity. The routes here given were adopted and subscribed to at a general meeting of the companies held in London, November, 1898.

EASTBOUND.

At all seasons of the year steer a course from Sandy Hook Lightvessel, or Five Fathom Bank South Lightvessel, to cross the meridian of 70° W., nothing to the north of latitude $40^{\circ} 10'$.

From January 15 to August 23, both days inclusive, steer from $40^{\circ} 10'$ N. and 70° W., by rhumb line, to cross the meridian of 47° W. in 41° N., and from this last position nothing north of the Great Circle to Fastnet or Scilly.

From August 24 to January 14, both days inclusive, steer from latitude $40^{\circ} 10'$ N., and longitude 70° W., to cross the meridian of 60° W. in latitude 42° N., thence by rhumb line to cross the meridian of 45° W. in latitude $46^{\circ} 30'$ N., from this last position nothing north of the Great Circle to Fastnet, when bound to the Irish Channel, and as near as possible to, but nothing north of, the Great Circle to Bishops Rock, always keeping south of the latitude of Bishops Rock, when bound to the English Channel.

JANUARY 15 TO AUGUST 23, BOTH DAYS INCLUSIVE.

Courses (true) and distances (in nautical miles): Sandy Hook Lightvessel to 70° W. (in $40^{\circ} 10'$ N.), S. $84^{\circ} 10'$ E., 177 miles; to cross the meridian of 47° W. in 41° N., N. $87^{\circ} 17'$ E., 1,055 miles, from this last position nothing north of the Great Circle to Fastnet or Scilly (Bishops Rock).

Great Circle to Fastnet.

Distance on Great Circle, 1,651 miles. Total distance, Sandy Hook Lightvessel to Fastnet, 2,232 miles.

Longitude	$47^{\circ} 00'$ W	$45^{\circ} 00'$ W	$40^{\circ} 00'$ W	$35^{\circ} 00'$ W	$30^{\circ} 00'$ W
Latitude	$41^{\circ} 00'$ N	$42^{\circ} 02'$ N	$44^{\circ} 16'$ N	$46^{\circ} 10'$ N	$47^{\circ} 45'$ N
Course	N $55^{\circ} 13'$ E	N $56^{\circ} 32'$ E	N $59^{\circ} 58'$ E	N $63^{\circ} 31'$ E	N $67^{\circ} 10'$ E
Longitude	$25^{\circ} 00'$ W	$20^{\circ} 00'$ W	$15^{\circ} 00'$ W	$10^{\circ} 00'$ W	$0^{\circ} 38'$ W
Latitude	$49^{\circ} 02'$ N	$50^{\circ} 00'$ N	$50^{\circ} 46'$ N	$51^{\circ} 18'$ N	$51^{\circ} 20'$ N
Course	N $70^{\circ} 54'$ E	N $74^{\circ} 43'$ E	N $78^{\circ} 34'$ E	N $82^{\circ} 27'$ E	N $82^{\circ} 46'$ E

Great Circle to Bishops Rock.

Distance on Great Circle 1,764 miles. Total distance, Sandy Hook Lightvessel to Bishops Rock, 2,996 miles.

Longitude	$47^{\circ} 00'$ W	$45^{\circ} 00'$ W	$40^{\circ} 00'$ W	$35^{\circ} 00'$ W	$30^{\circ} 00'$ W
Latitude	$41^{\circ} 00'$ N	$41^{\circ} 53'$ N	$43^{\circ} 52'$ N	$45^{\circ} 31'$ N	$46^{\circ} 50'$ N
Course	N $58^{\circ} 41'$ E	N $60^{\circ} 01'$ E	N $63^{\circ} 25'$ E	N $66^{\circ} 56'$ E	N $70^{\circ} 33'$ E
Longitude	$25^{\circ} 00'$ W	$20^{\circ} 00'$ W	$15^{\circ} 00'$ W	$10^{\circ} 00'$ W	$6^{\circ} 27'$ W
Latitude	$47^{\circ} 51'$ N	$48^{\circ} 45'$ N	$49^{\circ} 28'$ N	$49^{\circ} 42'$ N	$49^{\circ} 50'$ N
Course	N $74^{\circ} 14'$ E	N $77^{\circ} 58'$ E	N $81^{\circ} 44'$ E	N $85^{\circ} 33'$ E	N $88^{\circ} 15'$ E

AUGUST 24 TO JANUARY 14, BOTH DAYS INCLUSIVE.

Courses (true) and distances (in nautical miles): Sandy Hook Lightvessel to 70° W. (in $40^{\circ} 10'$ N.), S. $84^{\circ} 10'$ E., 177 miles; to cross the meridian of 60° W. in latitude 42° N., N. $76^{\circ} 23'$ E., 467 miles; thence by rhumb line to cross the meridian of 45° W. in

latitude $46^{\circ} 30' N.$, $N. 67^{\circ} 19' E.$, 700 miles, from this last position nothing north of the Great Circle to Fastnet or Scilly (Bishops Rock.)

Great Circle to Fastnet.

Distance on Great Circle, 1,411 miles. Total distance, Sandy Hook Lightvessel to Fastnet, 2,755 miles.

Longitude	$45^{\circ} 00' W$	$40^{\circ} 00' W$	$35^{\circ} 00' W$	$30^{\circ} 00' W$	$25^{\circ} 00' W$
Latitude	$46^{\circ} 30' N$	$47^{\circ} 57' N$	$49^{\circ} 07' N$	$50^{\circ} 01' N$	$50^{\circ} 41' N$
Course	$N 66^{\circ} 08' E$	$N 68^{\circ} 46' E$	$N 72^{\circ} 31' E$	$N 76^{\circ} 19' E$	$N 80^{\circ} 11' E$
Longitude	$20^{\circ} 00' W$	$15^{\circ} 00' W$	$10^{\circ} 00' W$	$5^{\circ} 38' W$	
Latitude	$51^{\circ} 06' N$	$51^{\circ} 22' N$	$51^{\circ} 20' N$	$51^{\circ} 20' N$	
Course	$N 84^{\circ} 03' E$	$N 87^{\circ} 57' E$	$S 88^{\circ} 08' E$	$S 87^{\circ} 50' E$	

Great Circle to Bishops Rock.

Distance on the Track, 1,540 miles. Total distance, Sandy Hook Lightvessel to Bishops Rock, 2,884 miles.

Longitude	$45^{\circ} 00' W$	$40^{\circ} 00' W$	$35^{\circ} 00' W$	$30^{\circ} 00' W$	$25^{\circ} 00' W$
Latitude	$46^{\circ} 30' N$	$47^{\circ} 44' N$	$48^{\circ} 42' N$	$49^{\circ} 24' N$	$49^{\circ} 50' N$
Course	$N 68^{\circ} 17' E$	$N 71^{\circ} 56' E$	$N 75^{\circ} 40' E$	$N 79^{\circ} 27' E$	East.
Longitude	$20^{\circ} 00' W$	$15^{\circ} 00' W$	$10^{\circ} 00' W$	$5^{\circ} 27' W$	
Latitude	$49^{\circ} 50' N$	$49^{\circ} 50' N$	$49^{\circ} 50' N$	$49^{\circ} 50' N$	
Course	East.	East.	East.	East.	

WESTBOUND.

From January 15 to August 14, both days inclusive, steer from Fastnet or Bishops Rock, on Great Circle course, but nothing south, to cross the meridian of $47^{\circ} W.$ in latitude $42^{\circ} N.$, thence by either rhumb line or Great Circle, or even north of the Great Circle if an easterly current is encountered, to a position south of Nantucket Lightvessel, thence to Fire Island Lightvessel, when bound for New York, or to Five Fathom Bank South Lightvessel, when bound for Philadelphia.

From August 15 to January 14, both days inclusive, steer from Fastnet or Bishops Rock, on Great Circle course, but nothing south, to cross the meridian of $49^{\circ} W.$ in latitude $46^{\circ} N.$, thence by rhumb line to cross the meridian of $60^{\circ} W.$ in latitude $43^{\circ} N.$, thence also by rhumb line to a position south of Nantucket Lightvessel, thence to Fire Island Lightvessel, when bound for New York, or to Five Fathom Bank South Lightvessel, when bound for Philadelphia.

JANUARY 15 TO AUGUST 14, BOTH DAYS INCLUSIVE.

Courses (true) and distances (in nautical miles).

Great Circle from Fastnet.

Distance on Great Circle, 1,618 miles.

Longitude	$9^{\circ} 36' W$	$10^{\circ} 00' W$	$15^{\circ} 00' W$	$20^{\circ} 00' W$	$25^{\circ} 00' W$
Latitude	$51^{\circ} 20' N$	$51^{\circ} 19' N$	$50^{\circ} 53' N$	$50^{\circ} 14' N$	$49^{\circ} 30' N$
Course	$S 84^{\circ} 34' W$	$S 84^{\circ} 19' W$	$S 80^{\circ} 23' W$	$S 76^{\circ} 31' W$	$S 72^{\circ} 41' W$
Longitude	$30^{\circ} 00' W$	$35^{\circ} 00' W$	$40^{\circ} 00' W$	$45^{\circ} 00' W$	$47^{\circ} 00' W$
Latitude	$48^{\circ} 12' N$	$46^{\circ} 46' N$	$45^{\circ} 02' N$	$42^{\circ} 06' N$	$42^{\circ} 00' N$
Course	$S 68^{\circ} 56' W$	$S 65^{\circ} 15' W$	$S 61^{\circ} 39' W$	$S 58^{\circ} 11' W$	$S 56^{\circ} 50' W$

Great Circle from Bishops Rock.

Distance on Great Circle, 1,733 miles.

Longitude	6° 27' W	10° 00' W	15° 00' W	20° 00' W	25° 00' W
Latitude	49° 50' N	49° 48' N	49° 35' N	49° 03' N	48° 20' N
Course	West.	S 87° 18' W	S 83° 29' W	S 79° 42' W	S 76° 56' W
Longitude	30° 00' W	35° 00' W	40° 00' W	45° 00' W	47° 00' W
Latitude	47° 22' N	46° 06' N	44° 38' N	42° 49' N	42° 00' N
Course	S 72° 14' W	S 68° 35' W	S 65° 02' W	S 61° 34' W	S 60° 13' W

Thence S. 85° 22' W., 1,028 miles, to a point south of Nantucket Lightvessel; thence S. 86° 51' W., 164 miles, to Fire Island Lightvessel; thence West 30 miles, to Sandy Hook Lightvessel. Total distance, Fastnet to Sandy Hook Lightvessel, 2,840 miles. Bishops Rock to Sandy Hook Lightvessel, 2,955 miles.

AUGUST 15 TO JANUARY 14, BOTH DAYS INCLUSIVE.

Courses (true) and distances (in nautical miles).

Great Circle from Fastnet.

Distance on Great Circle, 1,574 miles.

Longitude	9° 36' W	10° 00' W	15° 00' W	20° 00' W	25° 00' W
Latitude	51° 20' N	51° 22' N	51° 20' N	51° 20' N	50° 59' N
Course	N 86° 04' W	N 86° 23' W	S 89° 43' W	S 85° 12' W	S 81° 55' W
Longitude	30° 00' W	35° 00' W	40° 00' W	45° 00' W	49° 00' W
Latitude	50° 20' N	49° 38' N	48° 35' N	47° 16' N	46° 00' N
Course	S 78° 02' W	S 74° 12' W	S 70° 25' W	S 66° 43' W	S 63° 48' W

Great Circle from Bishops Rock.

Distance on Great Circle, 1,703 miles.

Longitude	8° 27' W	10° 00' W	15° 00' W	20° 00' W	25° 00' W
Latitude	49° 50' N	50° 08' N	50° 19' N	50° 21' N	50° 11' N
Course	N 81° 11' W	N 83° 54' W	N 87° 44' W	S 88° 24' W	S 84° 34' W
Longitude	30° 00' W	35° 00' W	40° 00' W	45° 00' W	49° 00' W
Latitude	49° 46' N	49° 08' N	48° 15' N	47° 07' N	46° 00' N
Course	S 80° 44' W	S 76° 56' W	S 73° 19' W	S 69° 28' W	S 66° 34' W

Thence by rhumb line S. 69° 08' W., 505 miles, to cross the meridian of 60° W. in latitude 43° N.; thence also by rhumb line, S. 71° 41' W., 455 miles, to a point south of Nantucket Lightvessel; thence S. 86° 51' W., 164 miles, to Fire Island Lightvessel; thence West, 30 miles, to Sandy Hook Lightvessel. Total distance, Fastnet to Sandy Hook Lightvessel, 2,728 miles; Bishops Rock to Sandy Hook Lightvessel, 2,857 miles.

Auxiliary Steamers may follow the routes given for full-powered steamers, or the directions for sailing vessels which follow.

Sailing Vessels, during the autumn, may stand to the NW., crossing the meridian of 30° W. in latitude 54° 30' N. or 55° N., then steer gradually to the SW. and endeavor to enter on the bank of Newfoundland about the parallel of 47° 30' N., passing Cape Race at a convenient distance; in this route, although heavy

weather is frequently experienced, the winds are generally more favorable, and the Arctic current assists in the latter part of the voyage.

In thick weather the thermometer will be found useful when approaching the banks of Newfoundland, as the temperature of the water falls on nearing them.

To the Strait of Belle Isle.—Steamers from the north of Ireland intending to pass through the Straits of Belle Isle cross the meridians of 20° and 30° W. in about latitude 56° 30' N.; the meridian of 40° in about 55° N.; and that of 50° in 53° 30' N. If bound to St. Johns, or south of Newfoundland, the same meridians are crossed as follows: 20° W. in about latitude 55° N.; 30° W. in 53° 40' N.; 40° W. in about 51° 30' N.; and 50° W. in 48° N.

Admiral Lavaud of the French Navy observes: "The best route to follow on leaving the English Channel is to make a little northing, so as to cross the meridian of 18° W. in latitude 50° N., continuing to make northing if bound to the northern ports of Newfoundland; but if to the southern part of the island or gulf of St. Lawrence, southing should be made, so as to strike the Great Bank between the parallels of 45° and 46° N."

Formerly the New York packet ships, when making their winter voyage from Liverpool, kept in high latitudes until nearing Newfoundland. This they did for the twofold object of avoiding the tempestuous weather so generally experienced to the southward, and of obtaining fairer winds. The voyage by this route is shortened in distance; and, although bad weather must be expected, it is not so violent as farther south; besides which the easterly currents are avoided.

In the spring it is advisable to take the track recommended by Admiral Lavaud, keeping a good lookout for ice when nearing the Banks. At this season of the year a lane of water is often found between the ice and the east shore of Newfoundland, extending from Cape Race to Bay Bulls, at which latter anchorage a vessel may await in safety a clear passage to St. Johns Harbor round Cape Spear.

Those bound to the Gulf of St. Lawrence, after passing to the southward of the Virgin Rocks, on the Grand Bank, and the Island of St. Pierre, should keep a middle course between Newfoundland and Cape Breton Island, recollecting that the harbors on the coast, westward of Fortune Bay, are impeded with dangers, with many rocks about the entrances, and that fogs are very prevalent on the coast. Special attention must be paid to the set of the current, and on no account should the use of the lead be neglected.

If the weather be foggy, a course should be shaped so as to pass a few miles north of Scatari Island; frequently after passing the meridian of Flint Island the fog will clear.

20° 00' W	25° 00' W
40° 03' N	48° 20' N
79° 42' W	S 75° 56' W
45° 00' W	47° 00' W
42° 49' N	42° 00' N
61° 34' W	S 60° 13' W

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20° 00' W	25° 00' W
51° 21' N	50° 59' N
S 85° 12' W	S 81° 55' W
45° 00' W	49° 00' W
47° 16' N	46° 00' N
S 66° 43' W	S 63° 48' W

20° 00' W	25° 00' W
50° 21' N	50° 11' N
S 85° 24' W	S 84° 34' W
45° 00' W	49° 00' W
47° 07' N	46° 00' N
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Cape Breton to Newfoundland.—When making the passage from Sydney to Cape Race, the attention of the navigator is especially directed to the set of the current; also to the imperative necessity of taking frequent soundings on the banks off the south coast of Newfoundland, the usual state of weather being fog.

When steering to the eastward, the edge of St. Pierre Bank is a good guide for longitude. Upward of 100 fathoms will be obtained if drawn into the middle of Placentia Bay. Cape St. Mary should not be approached, in thick weather, in less depth than 50 fathoms, nor Cape Pine in 40 fathoms.

Variation of the Compass.—On the coasts of Newfoundland and Labrador the variation of the compass changes so rapidly, as shown by curves of equal magnetic variation on the charts, that the course of a ship requires to be constantly changed in order to steer, on a straight line, from one position to another. This is particularly the case in steering for or through the Strait of Belle Isle, where, in foggy weather, great attention is necessary to the course in order to avoid any mishap.

Local Magnetic Disturbance.—Observation shows that in many parts of Newfoundland and Labrador the compass, on land, is subject to local magnetic disturbance, and there is reason to believe that a similar disturbance extends to the compasses of vessels, when at anchor, or passing over depths of less than 20 fathoms, in many localities. In view of this, the method of fixing position by angles and station pointer is preferable to the method by bearings.

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CHAPTER II.

BANKS OF NEWFOUNDLAND AND NOVA SCOTIA BANKS.

(H. O. Chart No. 980.)

Flemish Cap, the easternmost of the Newfoundland Banks, has only been partially examined. It extends within the 100-fathom line, about 60 miles in a north and south direction, and is 25 miles broad. The least depth known is 58 fathoms, near the south extreme, in latitude $46^{\circ} 47' N.$, longitude $44^{\circ} 28' W.$, the bottom being mud and large stones. There is deep water between it and Great Bank.

Great Bank of Newfoundland.—In crossing the North Atlantic Ocean to any port in Nova Scotia or the Bay of Fundy, vessels generally traverse the Great Bank of Newfoundland. This bank extends about 330 miles north and south, between the parallels of $48^{\circ} 30'$ and $43^{\circ} 00' N.$, and 390 miles east and west, between the meridians of $47^{\circ} 40'$ and $57^{\circ} 20' W.$, on the parallel of the Virgin Rocks. This includes St. Pierre and Green Banks, which are in reality a portion of the Great Bank. The only dangers whose existence have been verified are the Virgin Rocks and banks and the Eastern Rocks.

The form of the Great Bank is irregular, but it reaches its most eastern limit on the parallel of the Virgin Rocks. South of this parallel it trends to the southwest for about 230 miles, and decreases in depth, so that on the parallel of $44^{\circ} N.$ there is only a depth of 22 fathoms, over sand. On the parallel of $43^{\circ} N.$ and meridian of $50^{\circ} W.$ the bank falls into deep water, and its 60-fathom edge trends to the northwest.

The general depth of water on the Great Bank, as far west as the 52d meridian, varies from 30 to 45 fathoms, and the bottom is usually sand, gravel, or broken shell.

Westward of the 52d meridian the bank is intersected by veins of deeper water, one of which, extending southward from Placentia Bay, has a depth of 105 fathoms on the parallel of the Virgin Rocks.

The Great Bank is separated from Ballard Bank, near Cape Race, by a channel about 20 miles wide, having from 80 to 100 fathoms water, over mud.

Virgin Rocks.—The bank (with depth of 3 to 30 fathoms) on which these rocks are situated occupies a space 8 miles long in a north and south direction and $3\frac{1}{2}$ miles greatest breadth. The least

depth found on the Virgin Rocks was 3 fathoms, over a small pinnacle, on which the sea breaks in heavy weather. From this pinnacle two rocks, with 4 and $5\frac{1}{2}$ fathoms water over them, lie respectively NNW., distant nearly 200 yards, and SW. $\frac{1}{4}$ mile distant. These rocks, with surrounding shoal ground of less than 20 fathoms, comprised within a diameter of about 1,100 yards, form the Main Ledge.

South Shoal, with least water of $4\frac{1}{2}$ fathoms, is SSE. $1\frac{1}{2}$ miles from Main Ledge, and occupies a space 1,200 yards long in a north and south direction, with a breadth of 700 yards, the depths being under 20 fathoms. Two other rocks with 5 fathoms of water are NW. of this rock, the farthest being 300 yards off. Two small rocks with 9 and 10 fathoms, respectively, lie near the north and east edges of this bank.

South Shoal is reported by the fishermen to break heavier and to be more dangerous than the Main Ledge.

Main Ledge and South Shoal are the only dangers in ordinary weather, but several other parts on these shoals are reported to break in heavy gales; the foul ground, combined with the tidal stream, causing a confused sea even in strong breezes.

Prairie Shoal, least water 9 fathoms, is about 800 yards long and 400 yards broad, within the depth of 20 fathoms. It is north $2\frac{1}{2}$ miles from the shoalest part of Main Ledge, and midway between are Northwest Shoal and Maloney Ledge, with least water 11 and 14 fathoms, respectively.

Ice.—The Virgin Rocks are usually surrounded by ice until the middle of April or beginning of May.

Eastern Shoals.—The least water found on the shoals was 7 fathoms, about $\frac{1}{2}$ mile SE. of the Nine-fathom Bank, which lies near the center of a group of shoal patches extending about $3\frac{1}{2}$ miles in a north and south direction, with a breadth of 2 miles, having depths on them of 12 to 25 fathoms. The Nine-fathom Bank is in latitude $46^{\circ} 26' 45''$ N., longitude $50^{\circ} 28' 06''$ W.

Eastern Shoals are the easternmost known to the fishermen; those with 13 fathoms or less over them are reported to break in heavy weather. With a strong breeze there is a confused sea in the locality.

Bogy Ledge, the shoalest of four banks, occupying a space 1,200 yards long and 550 yards broad, has 12 fathoms on its shoalest part, which is $1\frac{1}{2}$ miles NE. from Nine-fathom Bank.

Saunders Shoal, about 300 yards in diameter, has 11 fathoms least water, and is $\frac{1}{2}$ mile SE. by S. from Nine-fathom Bank.

A depth of 8 fathoms was reported to have been found in 1874 about 40 miles E. by S. from the Eastern Shoals.

Emmeline Shoal, of 12 fathoms, is 2 miles north of Nine-fathom Bank, and the Gilley Shoals, of 13 and 12 fathoms, are about a mile SSE. of the bank.

Tidal Streams.—In the immediate neighborhood of the Virgin and Eastern Rocks the tidal stream attains a velocity of $\frac{1}{4}$ knot an hour, but a few miles from them it is scarcely perceptible; during the period of examination a slight southerly set was experienced.

Green Bank, on which the least depth of water is 30 fathoms, stony bottom, is in reality the western extremity of the Great Bank, being only partially separated from it by a gully of deep water, in about longitude 54° W., having over 60 fathoms mud in it. Its western limit is in longitude 55° W., and its southern margin in latitude $44^{\circ} 50'$ N., and the peculiarity of its western limit nearly coinciding with the meridian of 55° W. makes it of service in verifying the longitude. The deep gully between it and St. Pierre Bank is 14 miles wide, with 70 to 90 fathoms mud.

A 5-fathom patch in latitude $45^{\circ} 46'$ N., longitude $54^{\circ} 20'$ W., was reported on Green Bank in 1881.

St. Pierre Bank has its eastern limit nearly on the meridian of $55^{\circ} 20'$ W., and attains its southern boundary in latitude 45° N., longitude $57^{\circ} 50'$ W. The bank then trends about NW. for about 120 miles to its western margin, in latitude $46^{\circ} 40'$ N., longitude $57^{\circ} 20'$ W.

The soundings on this bank vary from 20 to 45 fathoms, the ordinary bottom being sand and broken shell.

(H. O. Chart No. 1412.)

Nova Scotia Banks.—Although the nature and extent of the principal banks which mark the approaches to Nova Scotia are not perfectly known, yet the knowledge of their limits and depth of water has been greatly increased during late years. Much useful information respecting the outer banks was diffused by the French charts in 1858; the surveys of La Have and Roseway Banks by Captain Shortland, R. N., in 1859, were satisfactory in every respect; and, later still, the offshore soundings by Captain Orlebar, R. N., in 1864, are valuable additions to the hitherto scanty knowledge of the inequalities of the various banks which lie off the much-exposed and dangerous coast of Nova Scotia. Of these banks, the principal in extent and most important in position are the Banquereau and Sable Banks, the former being the easternmost of what may be correctly designated the Nova Scotia Banks.

Banquereau Bank, with 15 to 50 fathoms, is an extensive plateau of sand, gravel, and shell, and is distinguished from contiguous banks by numerous flat sea eggs without prickles, which are found on the bottom. It extends from about latitude $44^{\circ} 30'$ N.,

longitude $57^{\circ} 15' W.$ in a westerly direction 120 miles to the meridian of $60^{\circ} W.$ This bank is separated from St. Pierre Bank by a deep gully nearly 60 miles wide, having from 200 to 300 fathoms muddy bottom; and from the east edge of Sable Island Bank by another gully of deep water 9 miles across at its narrowest part.

On referring to the chart it will be seen that its shoalest part, with 15 fathoms, in latitude $44^{\circ} 35' N.$ and longitude $57^{\circ} 54' W.$, is the apex of a ridge (having less than 30 fathoms) upward of 40 miles in length NE. and SW., and that relatively with the dangers off Sable Island it is not only a safe offing for vessels intending to pass to the northward of the last-named danger, but by keeping, if possible, in the same parallel, the long and continuous line of comparatively shoal water would enable a vessel, under ordinary circumstances, to feel her way with some degree of confidence until she has passed to the westward of the meridian of Sable Island.

Soundings obtained by the French cruiser *Naiade* in 1894 indicate that Banquereau Bank extends more to the eastward than is indicated on the charts. This vessel obtained a sounding of $40\frac{1}{2}$ fathoms in latitude $44^{\circ} 43' 00'' N.$, longitude $57^{\circ} 18' 15'' W.$, a half hour before not having found bottom in 109 fathoms. From the above position the *Naiade* stood west at a speed of 6 to $6\frac{1}{2}$ knots, sounding every half hour, and obtained soundings of 32, $28\frac{1}{2}$, 29, $24\frac{1}{2}$, 16, 20, and 20 fathoms.

Misaine and Canso Banks.—Misaine Bank lies to the northward of Banquereau Bank, between the latter and Scatari Island, and between its NW. edge, with 60 fathoms, and a similar depth on the outer edge of a bank extending from the shores of Cape Breton Island, there is a deep gully 20 miles wide, with from 70 to 136 fathoms. The least water yet found on this bank is 36 fathoms, the general depth being more than 40 fathoms, with a bottom of stone and broken shell. The outline of the bank is very irregular; its eastern limit is in latitude $45^{\circ} 28' N.$, longitude $58^{\circ} 10' W.$, and its western extremity is connected with Canso Bank by the 60-fathom line.

The least water found on Canso Bank is 35 fathoms, sandy bottom; the bank is separated from the north end of Middle Ground by a space of deep water, with 112 fathoms, and from the bank extending from Cape Canso by a narrow deep-water channel, with 84 fathoms.

Artimon Bank, at the east end of the deep-water gully separating Misaine Bank from Banquereau, is of small extent, the least water found being 37 fathoms, over a bottom of stone with starfish and sea eggs.

Middle Ground, about 30 miles to the northward of the west end of Sable Island, has as little as 10 fathoms, this depth being found at the extreme SE. end of the bank; there is also a depth of 15 fathoms toward the NW. extreme. The bank is about 40 miles in length NW. and SE., with depths varying from 10 to 30 fathoms, and is separated from the west end of Banquereau Bank by a gully 5 miles across, with 100 fathoms. Its inner end extends to within 35 miles of Cape Canso, the distance between being occupied principally by a submarine valley, having in one locality a depth of 140 fathoms.

If, in foggy weather, soundings should be struck within the 30-fathom line they will impart confidence in making the coast of Nova Scotia, as the middle of the bank is in about the same parallel as the entrance of Halifax Harbor.

Sambro Banks consists of two banks; the eastern is about 12 miles in length, within the 60-fathom line, and lies SE. 36 miles from the same depth south of Sambro Ledges. The western bank, with 52 fathoms, sand and gravel, is about 4 miles in extent and separated from the eastern bank by a channel 10 miles wide, with 98 to 100 fathoms, stone. A bank similar in size to the western bank, with 32 fathoms water, lies NE. about 50 miles from it. These banks are surrounded by deep water. There are other detached patches of less than 60 fathoms in the neighborhood, not yet accurately defined.

Emerald Bank is about 20 miles SE. from the eastern Sambro Bank. The least water yet obtained on it is 38 fathoms.

La Have Bank.—The northeastern shoal plateau of this bank, with from 43 to 50 fathoms, sand and stone, is 32 miles in length, north and south, by 15 miles broad, the north end being about east nearly 60 miles from Baccaro Point. Another bank, with 45 to 50 fathoms, exists to the westward of the south end of the above, from which it is only separated by a shallow gully with 53 fathoms.

The 60-fathom boundary of the bank is well defined all round and includes within its limits Brown Bank, described hereafter.

Roseway Bank.—The shoalest part of this bank, with from 31 to 40 fathoms, stone and pebbles, is about 11 miles in length, and its center is on the same parallel as Cape Sable lighthouse and the north end of La Have Bank. Between the 60-fathom lines of La Have and Roseway Banks there is a deep channel, with from 70 to 100 fathoms; whilst inshore, Roseway Bank is connected by a narrow neck with the 60-fathom line of the bank extending along the coast.

Brown Bank, within the 50-fathom line, is 55 miles in length, with an average breadth of 15 miles. It lies to the westward of,

but contiguous to, La Have Bank, and with it forms an almost continuous bank, following the line of coast off Cape Sable at the distance of 50 miles offshore.

Near the western extremity of Brown Bank is a sandy rise about 10 miles long north and south, with from 14 to 30 fathoms, the former depth having been obtained in latitude $42^{\circ} 47' N.$, longitude $66^{\circ} 12' W.$ This depth lies about 44 miles SSW. of Cape Sable.

Outside the 50-fathom line of Brown Bank there is a deep-water channel 25 miles wide, separating it from the 60-fathom line at the northeastern extremity of George Shoal, off the Massachusetts coast.

Inside Brown Bank there is a narrow deep-water channel with above 60 fathoms, dividing it from the same depth on the edge of the shore bank, which follows, about 30 miles off, the line of coast from Cape Sable to as far as Bryer Island, abreast which the deep water approaches within 5 miles of the shore.

There are many inequalities on the main shore bank off the SW. coast of Nova Scotia, which it would be useless to describe in detail in these directions, inasmuch as they are clearly delineated on the chart, by studying which the navigator will have a comprehensive idea, not only of the positions of, and depths upon, the various small patches, but also of the relative positions of the larger banks.

Caution.—The bottom in the approach to Halifax is very uneven, and soundings over this area have not yet been obtained in sufficient detail to justify much confidence being placed in a position assumed from depths alone.

Birds.—The approach to the banks is generally evidenced by an increasing number of sea fowl around the vessel. Hagdowns, a species of gull, heavy of flight, are seen all across the Atlantic, but on the banks they become very numerous, as well as divers and other sea fowl.

Fish.—All the banks off Newfoundland and Nova Scotia abound in cod and other fish, and during the summer season a large fleet of fishing vessels are found at anchor upon them. The ordinary track of the mail steamers is left open, but north and south of this unoccupied track numerous American, French, and Canadian vessels are employed in the cod fishery, especially on the Great Bank of Newfoundland, St. Pierre Bank, Banquereau and Green Banks, and Middle Ground.

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CHAPTER III.

NEWFOUNDLAND. SOUTH COAST—CAPE RACE TO CREW POINT.

(H. O. Chart 581b and B. A. Chart 2915.)

Cape Race is the southeastern extremity of Newfoundland. It is $9\frac{1}{2}$ miles SW. by S. from Cape Ballard, and is distinguished by a lighthouse standing close to the keeper's dwelling, with a beacon in front. At its extremity there is a detached, wedge-shaped rock, 40 feet high.

The land about the cape appears low and flat, in comparison with Cape Ballard or Cape Pine, but cliffs of slate, from 100 to 200 feet high, face the sea there in nearly vertical strata. The land rises gradually, and in clear weather there will be seen between 10 and 12 miles to the NE. a rocky range known as the Red Hills, rising 710 feet high.

Cape Race is bare of trees, and has a brown, desolate, and barren appearance, but in sheltered hollows and along the courses of the rivulets there is a stunted growth of spruce, fir, and alder. The rocks are of the Silurian system, and are thinly covered with peat and bog.

Boats may land in moderate weather in coves east and west of the lighthouse, but the ordinary landing is in Cape Cove, about $\frac{1}{2}$ mile NE.

Light.—The lighthouse on Cape Race is 40 feet high, circular, the SE. face painted red and white in broad vertical stripes, and shows at the height of 180 feet above the sea a revolving white light, attaining its greatest brilliancy every half minute, and visible from seaward in clear weather between the bearings of N. 38° E. (N. 66° E. mag.) and S. 38° W. (S. 66° W. mag.), 19 miles.

Beacon.—A conical beacon stands 50 yards S. 31° E. (S. 3° E. mag.) from the lighthouse.

Fog Signal.—In thick or foggy weather a whistle about 83 yards SE. by S. of the lighthouse will sound blasts of ten seconds' duration at intervals of fifty seconds.

Signal and Ice-reporting Station.—Cape Race is connected by telegraph with St. Johns, to which place vessels passing are reported. It is also an ice-reporting station; information as to ice, wind, temperature, and weather indications can be obtained during the months April and May, by communicating with the signal station. A Lloyds station also here.

Tides.—It is high water, full and change, at Cape Race at 7h. 00m. Springs rise $6\frac{1}{2}$ feet and neaps 5 feet.

Currents.—As fogs greatly prevail along the south coast of Newfoundland, especially during June and July, it is necessary that the ordinary set of the currents and dangerous indraught into the deep bays should be known and guarded against.

Soundings.—When in the vicinity of Capes Race and Pine care should be taken to obtain frequent casts of the lead; the soundings will be found regular, and of moderate depth, and in addition to these precautions the chart should be referred to.

Ice.—It should be remembered that icebergs may be met with off this coast at nearly all seasons. In March, April, May, June, and sometimes July, field ice is often encountered, either on the banks or nearer to Newfoundland.

From twenty years' observations the earliest arrival of northern ice recorded at Cape Race is 17th January, and the latest 12th April, the average date being about the first week in February. The departure of ice varies from 25th February to 7th June, the average time being about the middle of April.

Ballard Bank lies parallel to the coast about 7 miles eastward of Cape Race; it is $13\frac{1}{4}$ miles in length, with a greatest breadth of $4\frac{1}{2}$ miles, gradually tapering to the NE., where at its extremity it is only $\frac{1}{2}$ mile wide. At the north end it is rocky and the soundings irregular, but they are less variable toward the southern extremity.

The sea, on the NE. portion of this bank, breaks during heavy winter gales; and probably also on the whole of the 7 and 8 fathoms patches near the cape.

Tommy Rock lies at the north extreme of Ballard Bank; it is small in extent, and has a depth of 9 fathoms water over it.

Garret Rock, with a depth of 8 fathoms water over it, is small and lies N. 82° E. (S. 70° E. mag.), a little more than 9 miles from Cape Race lighthouse.

A Bank, with 13 fathoms water over it, bears N. 89° E. (S. 63° E. mag.), $8\frac{3}{4}$ miles from Cape Race lighthouse.

Pig Bank, a small fishing bank with 18 to 20 fathoms water, over rock, lies S. 17° W. (S. 45° W.), 5 miles from Cape Race light.

Horseshoe Rock, a patch $\frac{1}{2}$ mile in length, NE.—SW., and $\frac{1}{2}$ mile in width, with a least depth of 12 fathoms on it, lies with Cape Pine lighthouse bearing N. 77° W. (N. 49° W. mag.), distant $9\frac{1}{2}$ miles.

Nickerson Bank consists of a rocky patch, extending within the 20 fathoms limit 500 yards, WNW.—ENE., with a width of 250 yards. On it are two heads of $10\frac{1}{2}$ and 12 fathoms, the former

lying near the NW. end of the bank, the latter 150 yards to the SE., with 13 and 14 fathoms between. The bank is fairly steep-to.

A careful search failed to find less water than the $10\frac{1}{2}$ fathoms above mentioned. This spot, on which the sea probably breaks in heavy weather, lies with Cape Race lighthouse bearing N. 41° E. (N. 69° E. mag.), distant $17\frac{1}{10}$ miles. No tide rip was noticed, but with a long swell from the westward there was a decided lift over the shoalest part.

Mr. Nickerson states that there are other patches ("one or more") of 11 and 12 fathoms between Nickerson Bank and Lamb Rock (about 28 miles to the westward).

Directions.—In approaching Cape Race from the eastward, after crossing Great Bank, the water gradually deepens to 90 and 100 fathoms; after which, on Ballard Bank, it rapidly shoals to about 25 and 15 fathoms.

After crossing this bank the water again deepens to 40 fathoms, and then shoals gradually to the shore, which is generally bold, so that 7 fathoms water is often found at a distance of 200 yards from the cliffs.

Coming from the westward in thick weather, the soundings are so regular that a depth of 30 fathoms may be easily maintained, and both Cape Pine and Cape Race rounded with safety. As the soundings after passing Cape Race deepen, a cast of 60 to 80 fathoms will show the navigator that he has rounded this cape, and, with attention to the lead, a course may be steered to the north-eastward with confidence.

Cripple Rock.—At $1\frac{1}{2}$ miles S. 42° W. (S. 70° W. mag.), of Cape Race is Cripple Rock, with $4\frac{1}{2}$ fathoms water on it; it is supposed to be a small pinnacle on which the sea seldom breaks. To pass east of it, keep Cape Ballard open of Cape Race until Cape Pine is open of Mistaken Point, and *vice versa*. In the caplin season—June and July—a large number of boats are engaged in fishing along this coast.

Several shoals, with 6 to 8 fathoms water over them, lie off the coast between Mistaken Point and Cape Race; the westernmost, with 7 fathoms water over it, bearing S. 28° E. (South mag.) distant $1\frac{1}{2}$ miles from Mistaken Point.

Mistaken Point, 100 feet high, is a green hummock rising from slate cliffs, 4 miles westward of Cape Race. Between it and the cape is Shingle Head, with slate cliffs 150 feet high.

Beacon.—A cairn stands on Mistaken Point, which will be found of much use when making the coast in foggy weather.

Freshwater Point, W. by N., distant 2 miles from Mistaken Point, is low, with the land rising in the rear; in the cove north of the point is a waterfall 100 feet high.

Trepassey Bay, 12 miles wide by 4 miles deep, is formed between Freshwater Point and Cape Pine. Within it is Portugal C ve, Biscay and Mutton Bays, and Trepassey Harbor; between Freshwater Point and Portugal C ve the cliffs are 200 feet high, and the shore rocky and difficult of access.

Caution.—Upon this shore many wrecks have occurred in foggy weather, caused doubtless by the indraught, which sometimes runs 2 miles an hour on the east side of this bay. Sailing vessels should be careful to keep a good offing, as the wind often falls light near the shore, and the drift of the sea and current are nearly always toward the land.

Portugal C ve is rocky and dangerous. On the eastern side a few families live, who farm as well as fish, and have a good stock of cows, horses, and sheep.

Cape Mutton, a round hill 330 feet high, divides Biscay and Mutton Bays. Both these bays should be avoided by sailing vessels. Biscay Bay is $\frac{3}{4}$ mile wide and 2 miles deep, and at its head is a stream abounding with trout and salmon. With offshore winds there is safe anchorage for steamers in the middle of the bay in 5 fathoms water, over sand.

Trepassey Harbor.—Powles Head is the termination of a peninsula which forms the southern shore of Trepassey Harbor, and is connected to the mainland by a narrow shingle beach; this peninsula protects Trepassey Harbor and separates it from Mutton Bay. Powles Head is 120 feet high, whilst the land on the north shore rises to the height of 450 feet. On this account it is often difficult when coming from the eastward to distinguish the entrance to Trepassey Harbor.

At Beach Point, the north end of the peninsula, the settlement commences and contains a population of 700 persons. The village, with its Roman Catholic chapel, is on the eastern side of the harbor, and may be seen from seaward over the beach of Mutton Bay.

Communication.—The Coastal Steamship Company's steamers from St. Johns call here fortnightly during summer and autumn. There is telegraphic communication with, and a road leading to, St. Johns, distant 70 miles.

Buoy.—An automatic whistling buoy is moored with Powles Head bearing N. 17  E. (N. 45  E. mag.), distant 1 $\frac{1}{4}$ miles. On account of the exposed position of this buoy it is liable to break adrift and is generally removed during winter. (Missing 1895.)

Emerald Shoal, lying about 700 yards SSE. of Daniel Point, is composed of mud, sand, and stones, with a depth of 11 feet at low water, spring tides, and 2 to 4 fathoms around; it lies with Roman Catholic chapel bearing S. 32  E. (S. 4  E. mag.), distant $\frac{1}{4}$ mile.

Anchorage.—The ordinary anchorage, in 5 fathoms water, over mud, 600 yards above Beach Point, is sheltered; but the best anchorage is above Meadow Point, where a vessel will be completely landlocked, and good anchorage may be obtained in 7 fathoms water, over muddy bottom.

Water may be readily obtained from a stream near Meadow Spit.

Pilots.—Fishing boats from Trepassey are nearly always to be found in the offing, and the fishermen are generally qualified to act as pilots.

Dangers.—Shoal water extends 300 yards S. by W. $\frac{1}{2}$ W. from Powles Head; and from the next point east of it a reef runs out 800 yards in the same direction, upon which the sea always breaks.

Savadown Rock, with 6 feet water on it, lies S. 84° W. (N. 68° W. mag.) from the first gravelly beach a mile NE. from Powles Head, and is cleared by keeping Sims Point at the SE. side of entrance to the NE. arm, open at Beach Point.

Meadow Bank, on the west side of the harbor, is cleared by keeping Baker Head, the outer extremity of the land on the west shore open south of Skinner Rocks. On both sides of the harbor the water is shoal and rocky.

Directions.—Vessels, bound into Trepassey Harbor during thick weather, should endeavor to make the land on the west side of Trepassey Bay about Baker Head, which is bold, and lies about 3 miles SW. from the entrance to Trepassey Harbor.

From Cape Pine to Baker Head, 4 miles NE., the land is barren, and from Baker Head to the entrance of Trepassey Harbor it is covered with brushwood.

To enter Trepassey Harbor with a fair wind, run in for Baker Head, a precipitous bluff 360 feet high, and then keep rather toward the shore of Powles Head, bearing in mind that shoal ground extends, for a distance of 300 yards S. by W. $\frac{1}{2}$ W. from the head, and nearly 800 yards in the same direction from the next point east of it. Proceeding up the harbor, Sims Point, open of Beach Point, bearing N. 28° E. (N. 56° E. mag.), clears Savadown Rock, and Baker Head, the outer extreme of land on the west shore, kept open of Skinner Rocks, S. 39° W. (S. 67° W. mag.), clears Meadows Bank.

When about 600 yards above Beach Point, anchor in 5 fathoms water, with Beach Point and Powles Head in line, bearing S. 27° W. (S. 55° W. mag.), or if proceeding to the anchorage north of Meadow Point, pass between Meadow Spit and Emerald Shoal, with Daniel Point bearing about N. 6° W. (N. 22° E. mag.).

Ice.—It should be remembered that during winter, if the ice is heavy on the east coast, blocking up all access to St. Johns and

the eastern harbors, vessels may safely enter Trepassey Harbor, which is only occasionally blocked by field ice, which arrives about 1st May and leaves about the 10th of the same month. NNE. winds clear the bay of ice; winds, south of east, fill the bay with ice; and southerly winds pack it. The last vessel generally leaves about the end of September.

Tides.—It is high water, full and change, in Trepassey Harbor at 7h. 0m.; springs rise $6\frac{1}{2}$ feet, neaps 5 feet. The tidal stream is weak, being only $\frac{1}{2}$ mile an hour.

Cape Pine is of slate cliffs, 200 feet high; on the SW. side the land is not so steep; but everywhere the coast is fringed with slate rocks in nearly vertical strata. The cape is bare of trees, and the land rising at the back is rocky and barren. In moderate weather boats may land in Arnolds Cove, about $\frac{1}{4}$ mile west of the cape, or in a cove $\frac{1}{2}$ of a mile to the NE. There is a good road from the lighthouse to Meadow Bank on the north side of Trepassey Harbor.

Light.—On Cape Pine is a light tower which exhibits, at 314 feet above high water, a fixed white light, visible from seaward in clear weather between the bearings S. 48° W. (S. 76° W. mag.) and S. 75° E. (S. 47° E. mag.) from a distance of 24 miles. The tower is circular and painted with red and white horizontal bands. Cape Freels lies one mile westward of Cape Pine, and being low, the light is seen over it, and is not obscured by the intervening land until on a bearing S. 75° E. (S. 47° E. mag.).

Henry Rock, a small patch of 8 fathoms, lies with Cape Pine lighthouse bearing N. 11° E. (N. 39° E. mag.), distant $2\frac{1}{4}$ miles.

Freels Rock, the only offlying danger, is a small rock with 3 fathoms water on it, lying 3 miles S. 56° W. (S. 84° W. mag.) from Cape Pine lighthouse. Powles Head, bearing N. 45° E. (N. 73° E. mag.) open of the cape, leads east of the rock, and Gull Island Point, N. 14° W. (N. 14° E. mag.), and open of St. Shots Western Head, leads westward of it. There is a clear channel with 10 and 12 fathoms water between it and the cape.

St. Shots Cove, 3 miles WNW. of Cape Pine, is open and exposed. Many shipwrecks have taken place in its vicinity, and principally on the Eastern Head, from which a ledge of slate rocks extends 200 yards SW. In most cases these wrecks have occurred during fog, and too often there has been a neglect of sounding, and a want of attention to the ordinary set of the currents.

A few families reside on the east side of St. Shots Cove, and are always ready to assist the shipwrecked and distressed mariner.

St. Marys Bay.—The entrance to this bay is about 20 miles wide, between the western head of Cape Pine and Lance Point (6 miles ESE. of Cape St. Mary); it contains several good harbors.

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St. Shots Cove, and are pressed mariner. is about 20 miles and Lance Point (6 al good harbors.

At the head of the bay are Salmonier River, Colinet and North Harbors; these harbors enjoy a much finer climate than that of the seaboard, and fogs are much less frequent than at the entrance.

The land, when brought under cultivation, is well adapted for pasture, or for the growth of potatoes and the hardier cereals.

A vessel of heavy draft should not approach the eastern shore of St. Marys Bay, north of Cape English, nearer than 2½ miles, nor to a less depth than 40 fathoms.

Ice.—Southerly and SW. winds fill the bay with ice, but NE. winds clear it, when the ice is driven to the westward.

Cape English, a precipitous bluff 330 feet high, on the east side of St. Marys Bay, appears, when seen from the SW., like an island. It is 10 miles from St. Shots Cove, and between it and Gull Island Point is Holyrood Bay, which, being open and exposed to the sea, affords no safe anchorage. Behind the long gravel beach which forms the shore of this bay is Holyrood Pond, 11 miles in length and a mile wide. A few fishermen reside at the north end of the beach. During spring, when the waters rise from the melting of snow, the beach is broken through, and during summer the channel becomes deep enough to permit the entrance of small fishing boats, but heavy seas in autumn usually close it again, so that during winter the pond has no outlet. It is deep, and abounds with cod-fish, trout, and salmon.

Bank Rock, with 4 fathoms water on it, lies 5 miles N. 8° W. (N. 20° E. mag.) from Cape English; to pass west of it, keep Shag Rock, at the south end of Holyrood Bay, well open of Cape English, bearing S. 11° E. (S. 17° W. mag.) until Lizzy Point in St. Marys Harbor is in line with Doubleroad Point, bearing N. 54° E. (N. 82° E. mag.).

Greet Rock, with 5 fathoms water on it, lies near the southern extreme of a narrow bank, 1½ miles in length, ¼ mile from, and running parallel to, the shore; from it Lahaye Point lighthouse bears N. 30° E. (N. 58° E. mag.), distant 2½ miles.

Woody Cove Rock, with 4 fathoms water on it, lies near the NE. extreme of the narrow bank mentioned above; from it Lahaye Point lighthouse bears N. 29° E. (N. 57° E. mag.), distant 1½ miles.

Lahaye Point is 7 miles N. by E. ½ E. of Cape English; from the point, a stony shoal, upon which the sea breaks heavily, extends 800 yards in a southwesterly direction.

Light.—Lahaye Point lighthouse, a cylindrical iron tower, 28 feet in height, painted red and white in horizontal bands, exhibits, at an elevation of 63 feet above high water, a fixed white light, which should be visible in clear weather from a distance of 9 miles.

St. Marys Harbor, 9 miles NE. of Cape English, is one mile wide at the entrance, and 4 miles deep.

The inhabitants, 518 in 1891, are mostly employed in the fisheries. The land, where cleared of stones, bears good crops of oats, potatoes, and hay; it is cultivated in small patches, and cattle and sheep have fair pasture.

Communication.—The Coastal Steamship Company's steamer calls here fortnightly during summer and autumn.

Anchorage.—There is fair anchorage in 6 fathoms water, over sandy bottom, abreast the village on the south side of the harbor, with the chapel bearing S. 16° W. (S. 44° W. mag.), but the best shelter is found 2 miles farther up in 7 fathoms water, over mud. Occasionally at the lower anchorage a heavy ground swell is experienced. No directions are required for entering, the chart being a sufficient guide.

Water.—Good water can be obtained at the head of the harbor, and small supplies of milk, eggs, and butter at the village.

Dangers.—The Coalpit, a rocky shoal, with 3 fathoms water on it, lies $\frac{1}{2}$ mile eastward of the lower anchorage, and 600 yards from Coalpit Point.

The Paddock, a rocky shoal, with 4 feet water on it, lies above the usual anchorage off the village, and north of the NW. beach near the head of the harbor.

Ice.—The ice in St. Marys Harbor is generally thin, and it is seldom frozen to the extent of interfering with anchorage. The harbor is often accessible when anchorage can not be obtained in Trepassey. South winds pack the harbor with ice; it is cleared by a NE. wind.

Tides.—It is high water in St. Marys Harbor, full and change, at 7h. 40m.; springs rise $7\frac{1}{2}$ feet, and neaps 5 feet.

Mal Bay, NW. of St. Marys Harbor, runs 3 miles NNE., and, as its name denotes, offers no safe anchorage except close to the head, in 6 fathoms, sand.

Shoal Bay is open to the prevailing winds, and should be avoided.

Great Colinet Island is 330 feet high, 4 miles in length, and a mile in breadth; it is generally bold-to, and the SE. point is about $4\frac{1}{2}$ miles westward of the entrance of St. Marys Harbor. At its north end there is limited anchorage, called Mother Lxx Cove, affording shelter from southerly winds.

Little Colinet Island is 235 feet high, a mile in length, and $\frac{1}{2}$ mile in breadth; it is separated from Great Colinet Island by a deep channel, $1\frac{1}{2}$ miles wide. Both islands have bare hills rising from rocky cliffs.

Colinet Passage.—There is deep water on either side of Colinet Islands, but the eastern passage is preferred. It is one mile wide in its narrowest part, and clear of danger, except a rock lying

nearly 100 yards N. 74° W. (N. 46° W. mag.) from Shoal-Bay Point; Mussel-Pond Point, kept open of Admirals Beach, bearing N. 33° E. (N. 61° E. mag.), clears this rock.

Good shelter from SW. winds has been found at an anchorage under the lee of the spit at Admirals Beach.

Salmonier River.—The entrance to this river, about 6 miles NE. of Little Colinet Island, is 1,400 yards wide, it narrows gradually, and, at 6 miles within, receives the waters of a shallow stream.

Above the curved gravel beach on the north side, a shoal of sand extends 200 yards from the shore, which will be cleared by keeping the south point of the entrance open, until the valley of Little Harbor bears S. 16° E. (S. 44° E. mag.).

Shoal water extends from the sandy beach in front of Little Harbor, and may be cleared by keeping Bluff Head and Cross Point in line, bearing N. 39° E. (N. 67° E. mag.). Little Harbor is the outlet of a fine run of fresh water, and affords, within the sandy beach, safe winter shelter for fishing craft.

Anchorage.—There is a Roman Catholic church on the south shore of the river, $1\frac{1}{2}$ miles from the entrance, off which there is anchorage in 8 fathoms water, over mud, or a vessel may proceed farther and anchor above the curved gravel beach on the north side, in 6 fathoms.

Tides.—It is high water, full and change, in Salmonier River at 7h. 40m.; springs rise $7\frac{1}{2}$ feet, and neaps 5 feet.

Colinet Harbor is 6 miles NNE. of Little Colinet Island, and the entrance between Pinchgut Island and Johns Pond is one mile wide. Good water may be obtained from a river at the head of the harbor.

A few settlers reside at Johns Pond, where there is fair anchorage for small vessels, and more convenient for the fisheries than in the harbor.

Directions.—Little Colinet Island kept open of Bushy Head, bearing S. 25° W. (S. 53° W. mag.), clears Johns Shoal, extending from Johns Pond on the west shore of the entrance; after passing this shoal keep toward the north shore, and pay attention to the soundings. To clear Back Shoal, extending 500 yards from Pinchgut Island, keep Davis Point open east of Half Island, bearing about N. 30° E. (N. 58° E. mag.), and anchor abreast Half Island in 7 fathoms water, over mud; this is considered the best anchorage in Colinet Harbor.

Tides.—It is high water, full and change, in Colinet Harbor at 7h. 40m.; springs rise $7\frac{1}{2}$ feet, and neaps 5 feet.

North Harbor.—The entrance to North Harbor is 2 miles north of Little Colinet Island. Cape Dog, rising 330 feet above the sea,

with perpendicular cliffs of slate, lies on the west side of the entrance.

Anchorage.—There are no dangers except near the shore, but the harbor is open to prevailing SW. winds, and therefore, can not be recommended as a secure anchorage except for small craft, which may anchor in safety in 3 fathoms water, over mud, about 4 miles within the entrance, under shelter of a beach on the north side.

Tides.—It is high water, full and change, in North Harbor at 8h.; springs rise $7\frac{1}{2}$ feet, neaps rise 5 feet.

Branch Cove.—Between North Harbor and Lance Point there are several coves indenting slightly the western shores of St. Marys Bay, but that of most importance is Branch Cove, 7 miles northeastward of Lance Point.

It is the outlet of a little river, over the bar of which, at high water and in moderate weather, fishing boats are able to cross, and lie secure.

Branch Head, the south extreme of the cove, is a steep bluff 260 feet high, and at its extremity are two high rocks, 40 feet high, named Hares Ears.

Dangers.—Off the western shore of St. Marys Bay are the following dangers:

Daly Rock, with a depth of 5 fathoms over it, lies on the western shore of St. Marys Bay, with Maggotty Point bearing N. 83° W. (N. 55° W. mag.), distant one mile.

Redhead Rock, with 4 fathoms water on it lies 2 miles S. 37° E. (S. 9° E. mag.), from Redhead.

Beckford Shoal, with 7 fathoms water, lies $2\frac{1}{2}$ miles N. 71° E. (S. 81° E. mag.), from Hares Ears.

Mussel Rock, having 6 fathoms water on it, is dangerous in a heavy sea; it lies $1\frac{1}{2}$ miles S. 34° E. (S. 6° E. mag.), from Hares Ears.

Redcove Rock, with 3 fathoms water on it, lies S. 14° E. (S. 14° W. mag.), nearly 2 miles distant from Hares Ears.

Lance Point, the SW. extreme of St. Marys Bay, is low, but the land one mile northward rises to the height of 200 feet. Shoal water extends 400 yards south of the point; and Lance Rock, with 12 feet water on it, lies $1\frac{1}{2}$ miles S. 8° W. (S. 36° W. mag.), from the point.

Delaney Rocks, are two sunken rocks of small extent, lying westward of Lance Point. These rocks, with depths of $2\frac{1}{2}$ and 3 fathoms respectively over them, lie NE. and SW. 300 yards apart. The northeastern and shoaler rock is situated with Lance Point bearing N. 84° E. (S. 68° E. mag.), distant $1\frac{1}{2}$ miles.

Bull and Cow are black slate rocks, 30 feet high, situated $1\frac{1}{2}$ S. 62° W. (West mag.) from Lance Point.

The Sunker, a rock nearly awash at low water, lies 800 yards S. 5° W. (S. 33° W. mag.) from Bull Islet, close off Bull Island Point.

(B. A. Chart No. 290.)

Cape St. Mary.—The coast from Lance Point trends WNW. for 5½ miles to Cape St. Mary, forming between three bays exposed to the sea. At a little distance the cape has the appearance of high tableland of uniform height, at the western extremity of which is the lighthouse.

The 30-fathom line of soundings is less than one mile from St. Mary Cays, so that in foggy weather it is not safe to approach the cape in less depth than 35 fathoms.

Burin Island lighthouse bears N. 75° W. (N. 47° W. mag.) distant 41½ miles from Cape St. Mary Lighthouse, forming the entrance to Placentia Bay, about 60 miles deep, containing numerous bays, harbors, and islands.

Light.—The lighthouse on Cape St. Mary, a cylindrical iron tower, 40 feet in height, and painted red, with white dwellings on each side, joined by a covered way, stands near the edge of a cliff 300 feet high, and exhibits a revolving light, showing red and white alternately, at intervals of one minute. The light is 390 feet above high water, and in clear weather may be seen from a distance of 23 miles.

The nearest landing place to the lighthouse is at Brierly Cove, about one mile to the northward.

Tides.—It is high water, full and change, at Cape St. Mary at 8h. 30m.; springs rise 7 feet, neaps 5 feet.

Dangers.—**Lamb Rock**, with a depth of 33 feet on it, consists of a pinnacle on a plateau about 200 yards in extent with a depth of 10 fathoms, and 400 yards in extent within the depth of 30 fathoms. With a heavy swell the sea breaks on this rock, and a wide berth should at all times be given to the position; it lies in latitude 46° 28' 05" N., longitude 54° 01' 30" W.

Caution.—This rock lies in the track of vessels passing the south coast of Newfoundland.

False Cay, with 12 feet water on it, is a rock lying 5½ miles S. 5° W. (S. 33° W. mag.) from Cape St. Mary lighthouse.

St. Mary Cays are two small rocks, 120 yards apart, lying from each other W. by N. and E. by S., and always showing, being nearly awash at high water. The water is shoal around, and the sea generally breaks heavily upon them; they bear from Cape St. Mary lighthouse S. 9° W. (S. 37° W. mag.), distant 6½ miles.

The Coast from Cape St. Mary, forming the east side of Placentia Bay, trends NNE. for 26 miles to the entrance of Placentia

Harbor. The land is of nearly uniform height, and the shore tolerably straight. The headlands are steep, with coves between, affording shelter to a few scattered fishing stations, fish being generally plentiful. The land, when cultivated, yields good crops of potatoes, oats, and hay.

Fogs.—During SW. winds the fog is generally very dense on the eastern side of Placentia Bay, especially about the headland of Cape St. Mary.

Ice.—Placentia Bay is sometimes partially filled with ice early in February, but it is seldom altogether filled before the middle of that month, and South or SW. winds are necessary to fill it. Shortly after the ice has rounded Cape St. Mary, the strong tidal stream on the eastern shore carries it as far as Ram Island, and heavy ice and small icebergs are occasionally carried up to Come by Chance Point. The bay was frozen over in 1875 and 1882.

Dangers.—There are several offlying rocks, which render an approach to this part of the coast, in a less depth than 40 fathoms, dangerous, except in clear weather.

Perch Rock, with 15 feet water on it, lies $5\frac{1}{2}$ miles N. 42° W. (N. 14° W. mag.) from Cape St. Mary lighthouse. The Bull and Cow, open of Cape St. Mary, leads SW. of the rock.

Nest Rock, with 9 feet water on it, lies a mile N. 24° E. (N. 52° E. mag.) from Perch Rock; the sea generally breaks on this rock.

Curslet Rock, with 12 feet water on it, lies 2 miles S. 51° W. (S. 79° W. mag.) from Breme Point.

Patrick Rock, with 9 feet water on it, lies $1\frac{1}{2}$ miles N. 76° W. (N. 48° W. mag.) from the mouth of the river at Patrick Cove.

Goose Shoal, having $4\frac{1}{2}$ fathoms water on it, lies nearly $\frac{1}{2}$ mile N. 45° W. (N. 17° W. mag.) of Goose Cove.

Girdle Rock, above water, except at very high tides, lies a mile S. 14° W. (S. 42° W. mag.) from Virgin Rocks.

False Girdle, having 6 feet water on it, lies about $\frac{1}{2}$ mile S. 39° E. (S. 11° E. mag.) from Girdle Rock.

South Rock, with 9 feet water on it, lies nearly $\frac{1}{2}$ mile S. 8° E. (S. 20° W. mag.) from Girdle Rock.

Virgin Rocks are three black rocks above water, one of which is 18 feet high; they lie $1\frac{1}{2}$ miles from the shore, and 6 miles S. 35° W. (S. 63° W. mag.) from Verde Point lighthouse, at the entrance of Placentia Harbor.

Gibraltar Rock, with 5 feet water on it, lies S. 65° W. (N. 87° W. mag.), distant $1\frac{1}{2}$ miles from Verde Point lighthouse. To pass north of it, keep Castle Hill open of Verde Point, bearing N. 74° E. (S. 78° E. mag.). There is a clear channel between this rock and the shore.

Moll Rock, having 6 feet water on it, lies $\frac{1}{4}$ mile westward of Shalloway Point. To pass to the southward of the rock, keep Dixon Point, the north point of Dixon Island, in line with Crève-cœur Point, bearing S. 62° E. (S. 34° E. mag.).

(B. A. Chart No. 2829.)

Verde Point, 26 miles NNE. of Cape St. Mary, is the SW. point of Placentia Road; a stony shoal extends nearly $\frac{1}{2}$ mile NNE. from the point.

Light.—The lighthouse tower on Verde Point, standing above a flat-roofed dwelling, painted white, is 44 feet in height, and exhibits at an elevation of 98 feet above high water, a fixed white light, which should be visible 11 miles.

Placentia Road, within Verde and Crève-cœur Points, affords indifferent anchorage over a bottom of sand and gravel. The roadstead is open to winds from west to north, which send in a heavy sea, and no vessel should remain at this anchorage when the wind veers from SW. to West, accompanied by a low barometer.

Privé-cœur Shoal, a patch of 24 fathoms least water, lies in the fairway $\frac{1}{2}$ mile west of Crève-cœur Point.

There is a 3-fathom patch in the roadstead, from which Verde Point light bears S. 63° W. (N. 89° W. mag.), distant one mile.

The north house on Town Point, open south of Castle Hill, bearing N. 88° E. (S. 64° E. mag.), leads nearly in mid-channel between Privé-cœur and Verde Point Shoals.

Submarine Telegraph Cables.—Six submarine telegraph cables are landed at Placentia, four of which are laid along the north side of the roadstead and two on the southern side.

In order to avoid fouling these cables, vessels should not anchor within $\frac{1}{2}$ mile of the northern side of the roadstead.

Ice.—Placentia Road is filled with drift ice with winds from SW. to NW., but NE. winds clear the roads, and anchorage can generally be obtained, by vessels drawing 12 feet water, in the Northeast Arm, in which the ice is kept open by the current. The Northeast Arm occasionally freezes between the 6th January and the 10th February, and breaks up between the end of March and 5th April, although in severe winters it has not broken up before 1st May.

Placentia Harbor is recognized by the rounded and detached character of the hills in its vicinity, which are higher than the tableland of Cape St. Mary. At the time of Cook's survey (1765), vessels could carry 20 feet at low water in the harbor, where now there is only 10 feet.

The small town, which was formerly a place of some importance, stands on the eastern side of an extensive shingle beach, and there is a fair carriage road to St. Johns.

The harbor is entered by a channel 65 yards wide, having 10 feet at low water between the points of entrance, which are low.

Communication.—There is communication by railway with St. Johns, distant $84\frac{1}{2}$ miles via Placentia Junction and Whitbourne, the railway wharf being close to the southward of Castle Hill; by steamer fortnightly with Halifax via St. Pierre and the Bras d'Or Lakes, C. B., and with St. Johns; and by telegraph over the Anglo-American Telegraph Company's wires.

Supplies.—Mutton can be purchased here in moderate quantities, and good water may be procured about one mile up the Northeast Arm.

Anchorage.—Within the points the harbor affords well-sheltered anchorage in 5 and 6 fathoms water, over mud. The best berth is on the north side, being more out of the whirl and eddy of the tide.

A tidal stream of four knots an hour, and the want of good leading marks renders it necessary to have the aid of a pilot to enter this harbor. The Northeast Arm is navigable for 5 miles; the Southeast Arm is only navigable for boats, and is entered by a narrow channel in front of the town.

Tides.—It is high water, full and change, in Placentia Harbor at 8h. 30m.; springs rise 7 feet, neaps 5 feet.

Shalloway Point is a low projection faced by a sand cliff, 30 feet above high water, within which are several houses; it is the south extreme of Marquise, the shingle beach that divides Sandy Cove from the sea.

Little Placentia Harbor is formed by a peninsula, 75 feet above high water, composed of gravel deposit covered with marsh, and faced by sand cliffs 30 to 40 feet high. These slope to a low point at the north, and rise again to Latine Point, 38 feet high, surmounted by a flagstaff. This peninsula is 2 miles long, expanding from the narrow neck of Marquise to $1\frac{1}{2}$ miles in width at the N.E. end. On the north is a beach of shingle, 5 feet above high water, surrounding a pond, the entrance to which is gradually silting up. There is no passage at low water even for a boat.

Roche Point is the extremity of another shingle spit, 9 feet above high water, stretching from the church and forming a basin between it and the pond, sheltered by a bar. This basin forms a shelter for the fishing fleet of the neighborhood, and is entered by keeping the west shore of Roche Point close on board. This point continues below the water about 200 yards to the north. Houses line the shore within the basin, and a Roman Catholic church, with a scaffold belfry near it, shows conspicuously.

Shoal water extends $\frac{1}{2}$ mile from Latine Point to a depth of 3 fathoms, and $\frac{3}{4}$ mile to a depth of 5 fathoms. White Point S. 56°

E. (S. 28° E. mag.) just open of Isaac Point, leads clear in 5½ fathoms.

The Deadman, a rock that just shows at low water and steep-to, lies 1¼ miles N. 8° W. (N. 20° E. mag.) from Shalloway Point.

Virgin Point, the NE. point of Little Placentia Peninsula and the turning point into the harbor, has shoal water 200 yards from it.

Cooper Cove is south of a point south of Virgin Point, from which a shoal, with only 3 fathoms on the outer edge, extends 800 yards, S. by W., falling steeply on the south side.

Sandy Cove is the name given to the head of the harbor. The NW. shore of the harbor slopes steeply from wooded hills, and may be approached to within 100 yards till abreast of Sa'monier, a shallow inlet on the shore opposite Marquise.

Anchorage may be had in Sandy Cove in 12 fathoms, mud, and off Cooper Cove in the same depth, taking care to clear the shoal off the north point of that cove.

Placentia Sound runs in with one bend SE. nearly 3 miles.

Isaac Heads, two remarkable conical hills 320 and 427 feet high, define the north side of the entrance and Fox Harbor. The shores fall steeply from wooded hills, and are bold, till within ¼ mile of the head.

Two Shoals encumber the entrance and are the only dangers. The outer, with 3 fathoms water, lies 1,200 yards S. 4° E. (S. 24° W. mag.) from Isaac Point. The inner occupies a space 400 yards long and 250 yards wide, the shoalest water, 6 feet, near the north end, bearing S. 36° E. (S. 8° E. mag.) 1,500 yards from Isaac Point.

Fox Harbor lies east of Isaac Point, by which it is sheltered. Samson Point, a low hummock 45 feet high under a flat hill 350 feet above high water, is the turning point from Placentia Sound. It is a shallow basin with houses on the surrounding shores; there are 2½ fathoms inside, but the entrance is between two shoals and has only 5 feet in it at low water.

Shag Rock, 5 feet high, lies off Samson Point.

Winds between south and west always draw down Little Placentia Harbor, and blow with heavy squalls under Isaac Heads. Even when it is comparatively calm outside, boats should always reef with those winds when approaching Isaac Point.

Ice.—in severe winters, Little Placentia Harbor freezes early in February, from Sandy Point to Cairn Head, and breaks up about 1st April, but it is only frozen about every six to eight years; northern ice generally arrives in March and remains three or four weeks. Placentia Sound freezes from White Island to Coxhill Island.

Tides.—It is high water, full and change, in Little Placentia Harbor, at 7h. 58m.; springs rise 7 feet, neaps rise 4½ feet.

Directions.—To enter Little Placentia Harbor, keep White Point on the north side of Placentia Sound S. 56° E. (S. 28° E. mag.), just open of Isaac Point, until Black Head, the SE. extreme of Little Placentia Peninsula, S. 34° W. (S. 62° W. mag.), is open of the east extreme (Lowroon Point), when a S. 14° W. (S. 42° W. mag.) course should be steered, taking care to keep Long Harbor Head N. 14° E. (N. 42° E. mag.) open north of Isaac Point, until Shalloway Point bears S. 50° W. (S. 78° W. mag.). This mark will lead to the anchorages that may be had in Cooper Cove when the west house bears north of N. 82° W. (N. 54° W. mag.), or in Sandy Cove on the leading mark, as convenient.

To proceed up Placentia Sound, round Isaac Point at 200 yards distant, and shut in Fox Island with that point before the summit on the south side of Little Placentia Harbor shuts in with the bluff below. Fox Island must be kept completely shut in until Sharp Peak over Ship Harbor is in line with the first notch in the hills east of the Neck of Isaac, when all danger is passed.

Ship Harbor extends NE. 4½ miles from Isaac Point. There is no danger in it except close to the shore and within 500 yards of the head. A bar, with 7 fathoms least water, lies across the entrance, deepening suddenly on both sides.

Northeast Cove, 3 miles from Isaac Point, is open to seaward, and affords no shelter.

Conway Cove, on the west side of Ship Harbor, has good anchorage in 17 to 10 fathoms, and from this cove to the head of the harbor vessels may anchor as convenient.

Two remarkable hills lie on the east side of Ship Harbor; Sharp Peak, 836 feet high, over the head, and Sugarloaf, 803 feet high, faced by shingle débris, sloping to Northeast Cove.

Fox Island, 250 feet high, 2½ miles northward from Latine Point, is a long, flat island covered with dark trees over red rock, the south part being bare from the summit. Shoal water over a white bottom extends 200 yards from the NE. Point.

Moratties are shoal banks that extend westward nearly 2 miles from Ship Harbor Point. The west patch, with 3 feet least water, lies nearly a mile S. 70° E. (S. 42° E. mag.) from the west point of Fox Island and is 400 yards long. The east patch, 1,600 yards long, is separated by a channel 300 yards wide from the west shoal, and 900 yards from the shoal water off Ship Harbor Point.

The best channel is close to Fox Island, keeping Red Island Harbor (on the west side of Placentia Bay) open south of Fox Island, until Bald Head is well shut in with Ram Islands. When Red Island Harbor opens north of Fox Island the shoals will be passed.

Northeast Cove, open south of Sparrow Point (the west point of Ship Harbor) N. 84° E. (S. 68° E. mag.), leads 150 yards south of these shoals.

To pass between Moratties and Ship Harbor Point in $4\frac{1}{2}$ fathoms, keep a landslip under Broad Cove Head in line with Isaac Point, S. 10° W. (S. 38° W. mag.), or a round hill over Bald Head Bay, just open north of Long Harbor Head, N. 14° E. (N. 42° E. mag.) until Red Island Harbor opens either side of Fox Island.

Ice.—Ship Harbor freezes early in February, from the point of Conway Cove to Sugarloaf Point, and breaks up about 1st April.

(B. A. Chart No. 290.)

Ship Harbor Point is a shingle spit, 6 feet above high water, stretching off the slopes of two cliff-faced hills 310 and 260 feet high, that mark the NW. point of Ship Harbor.

A bay, 1,300 yards deep, lies between Ship Harbor Point and Long Harbor Head, divided into two parts by a projecting steep point, the slope of a round hill, with numerous bowlders at the summit, 500 feet above high water. The south cove is shallow to the line of the points, but the north has anchorage with shelter from offshore winds in 10 fathoms, taking care to avoid the rocky points off Long Harbor Head.

Long Harbor Head is a steep, tree-covered point, sloping from two table-topped hills about 300 and 250 feet high. Shoal ground extends 300 yards from this point.

Long Harbor extends 7 miles in a northeasterly direction from Long Harbor Head. The shores of this harbor are bold-to, Tim Barrett Rock, awash at low water, being the only danger off the south shore; it lies 150 yards from the coast and $2\frac{1}{4}$ miles from the entrance.

Ice.—In severe winters Long Harbor freezes early in February and breaks up toward the latter part of April. Northern ice only arrives occasionally, about the latter end of February, leaving toward the latter end of April.

Crawley Island, 191 feet high, lies off a projection that divides Long Harbor into two arms, Long Harbor and St. Croix Bay. The SE. point is a shingle spit that extends under water a short distance, and off the west side are some low islets.

Civil East Cove.—The channel between Crawley Island and the main is shallow at the west end, so that boats only can pass at low water; but just inside the east entrance good anchorage for small vessels may be had in $4\frac{1}{2}$ fathoms, mud, or just outside in 10 fathoms for large vessels.

St. Croix Bay extends 2 miles north of Crawley Island. There are no dangers in it except close to the shore, and it affords good anchorage in 11 fathoms from $\frac{1}{4}$ mile to within 400 yards of the head. Over the west shore is Tom Power Lookout, a remarkable conical hill 562 feet high. St. Croix Point, the west extreme of that bay, slopes gradually from Tom Power Lookout, terminating in an islet about 40 feet high and a rock that covers 2 feet.

A Shoal, with 12 feet water, lies 200 yards off the point, and a rocky patch, with $3\frac{1}{2}$ fathoms, 700 yards southward from the point.

Shag Rocks are two islets at the entrance to Long Harbor. The west is a flat, grass-covered ridge 39 feet high, faced by dark cliffs, with a gap through it near the middle. A reef, awash at high water, extends off the south end. The east islet, 60 feet high, is tree-covered, and has a double top.

A rock, with one foot water, lies 140 yards from the west extreme, and a rock, with 6 feet water, 450 yards N. 59° E. (N. 87° E. mag.), from these islets.

A shoal, with $3\frac{1}{2}$ fathoms, lies 800 yards N. 23° E. (N. 51° E. mag.), from them, and a bank, with $8\frac{1}{2}$ fathoms water, lies $\frac{1}{4}$ mile S. 65° E. (S. 37° E. mag.) from Shag Rocks and 400 yards off the south shore.

Fish Rock, 10 feet above high water, is an isolated black islet $1\frac{5}{8}$ miles N. 31° W. (N. 3° W. mag.) from the west point of Fox Island.

A rock, with 10 feet water on it, lies 200 yards S. 73° E. (S. 45° E. mag.) from this islet.

Ram Islands are a cluster of islands and rocks occupying a space $2\frac{1}{2}$ miles long N. by E.—S. by W. and nearly a mile wide, lying 2 miles NNE. from Fox Islands. They are divided into two groups, the south known as the Upper and north as the Lower Rams.

The Upper Rams are four in number, namely, Merchant, Burke, Hole-in-the-wall, and King Islands.

Merchant Island, the southernmost, is conical, 310 feet above high water, and has a large patch of white moss at the summit that makes it conspicuous from the southward. Off the west end is an islet, low and steep-to. Off the NW. point is a small island 14 feet above high water, joined by shoal water to Merchant Island, and a rock, with 5 feet water on it, lies in the channel between this and Burke Islands, about 100 yards from the east point of Merchant Island.

The channel between Merchant and Burke Islands is 400 yards wide, and is clear in the middle, but in addition to the rock mentioned above is a shoal, with 6 feet water, 100 yards from the west extreme of Burke Island.

Burke Island is composed of a group of conical hills, sloping steeply to the sea, and to a valley in the center of the island. The two highest are over the south shore, 303 and 285 feet above high water. Little Burke Island lies off the east end; it has a square top, 42 feet above high water, and a spur rock extending west from it. There are only $3\frac{1}{2}$ fathoms in the narrow channel between Burke and Little Burke Islands.

King Island is $\frac{1}{4}$ mile long, and narrow, consisting of several hummocks joined by shingle beaches. It is off the north end of

Merchant Island, separated by a channel nearly 200 yards wide, with only 3 feet in it at low water.

Hole-in-the-wall Island, so called from a hole in the cliffs on the east side, consists of two portions, the north of bare rock almost joined to the south, a double mound 130 feet high, with a low neck between.

The channel between the two latter islands is 150 yards wide, and has $4\frac{1}{2}$ fathoms water in it.

Dangers.—West of these islands is a cluster of rocks and shoals extending westward $1\frac{1}{2}$ miles, within which no vessel should attempt to pass.

Rowland Rock is the outer of the group, awash at high water and steep to all round. It bears $1\frac{3}{4}$ miles N. 56° W. (N. 28° W. mag.) from the west point of Hole-in-the-wall Island. Shoal ground with uneven bottom runs S. by E. $\frac{1}{2}$ E. from Rowland Rock, terminating at $\frac{3}{4}$ mile in a rocky patch with 16 feet water. This shoal ground is steep to on the east and west sides.

Red Island Shoal, with 4 feet water on it, an isolated and most dangerous ledge, lies in the fairway of Placentia Bay and breaks only in bad weather. It bears S. 68° W. (N. 84° W. mag.) about $1\frac{1}{2}$ miles from Rowland Rock, and N. 50° W. (N. 22° W. mag.) 2 miles from Fish Rock. There is deep water at 100 yards all round.

Fish Rock, S. 53° E. (S. 25° E. mag.), well open east of Fox Island, leads south, and Tom Power Lookout N. 73° E. (S. 79° E. mag.) shut in with the Lower Rams, leads north of this shoal.

The Lower Rams consist of a group of low islets and rocks, the highest about 60 feet above high water, which should not be approached nearer than $\frac{1}{4}$ mile. Harbor Island, the largest, near the south end is conspicuous from the houses built on the several flat summits it contains. It is so called from an inlet, which nearly dries at low water, on the north side, where fishing craft find shelter.

Between these islands and the mainland are several banks with $7\frac{1}{2}$ and 8 fathoms, but there are no dangers except the following:

A Shoal, with $4\frac{1}{2}$ fathoms water, lies East (S. 62° E. mag.) nearly a mile from East Green Island, the eastern of the Lower Rams.

The coast north of St. Croix Point consists of two deep bays.

Cove-nan-drioch-clochan, or cove of the three stones, runs in nearly a mile from St. Croix Point. A plateau, with a depth of $7\frac{1}{2}$ fathoms, lies across it, and the coast is clear beyond 200 yards from the shore. The coves at the head are shallow.

Bald Head Bay lies north of Cove-nan-drioch-clochan and is clear within 200 yards of the head. The shores may be approached to within 100 yards. The dividing point between these bays is foul 200 yards off.

Bald Head is a conical mound 120 feet above high water, the extreme of the north shore of the bay, and the termination of a long mossy slope, at the inshore end of which is a curious pinnacle. Off the north extreme is a small island, separated by a narrow channel from the main. The whole of this head is steep-to.

Moany Cove, NE. of this head, is 400 yards deep, with a shingle beach at the head. Small vessels may anchor with offshore winds, and will find good holding ground near the west shore in 6 fathoms, sand.

Brine Islands, a cluster of islets and rocks almost innumerable, are separated from Bald Head by a channel $\frac{1}{4}$ mile wide, free from danger. Woody Island, the highest, has a series of conical grass-covered mounds, the highest 115 feet, at the base of which are some rocks close to the shore. The only easy passage through these islands is between Woody Island and the next island north, and should be taken in mid-channel.

Dick Burn Rock, with $4\frac{1}{2}$ fathoms water, lies 400 yards S. 59° W. (S. 87° W. mag.) from Woody Island.

Hog Rock, 400 yards S. 14° E. (S. 14° W. mag.) from Brine Islands, covers 5 feet, and is the only danger in the fairway, the other rocks being above water.

Blue Shag Island, 33 feet high, is the most northern of Brine Islands. It is so called from the peculiar bluish-gray color of the rock, and is unlike any other on the coast in that respect.

Isaac Rock, with 4 fathoms water, 1,200 yards N. 25° W. (N. 3° E. mag.) from Blue Shag Island, is the only danger north of Brine Islands. There are several fishing banks north and west of this, but none are dangerous.

Hammer Rocks, 700 yards N. 37° E. (N. 65° E. mag.) from Blue Shag Island, are a group, the outer of which just covers at high water. They are steep-to on the north and east sides.

The Coast from Moany Cove to Famish-gut consists of a series of coves and heads with few prominent features. Corbin Head, a wedge-shaped hummock 70 feet high, lies a little more than a mile N. 20° E. (N. 48° E. mag.) from Bald Head. South of it is a small cove.

Corbin Head Shoal, with 16 feet water, lies 700 yards N. 87° W. (N. 59° W. mag.) from Corbin Head.

Trinny Cove Head, one mile NNE. from Corbin Head, is separated from the main ranges by a deep valley, drained by a considerable stream that empties into Trinny Cove, south of the head, through a sandy beach with an islet off it. There is enough water for boats to enter at high tide, and shelter is sometimes sought there while wooding or from stress of weather.

Hiram Rock, 4 feet above high water, lies off this head.

Red Cove Head, a mile from Trinny Cove Head, forms the south side of Red Cove, and the entrance to Famish-gut. A rock, with 10 feet water, lies 100 yards off the west point of the cove.

Famish-gut extends $1\frac{1}{2}$ miles N. by E. from Red Cove Head. Off the east shore is Bungle Island, a black rock 7 feet above high water, 600 yards from Red Cove Head.

Bungle Island Rock, with one foot water, lies 400 yards S. 37° W. (S. 65° W. mag.) from Bungle Island.

A Rock, that covers 5 feet, lies 200 yards N. 65° W. (N. 37° W. mag.) from Bungle Island.

A Rock, with 3 feet water, lies 200 yards off the north shore, and $\frac{1}{2}$ mile from the black islet off the north head. Trinny Cove, Grassy Island, kept open of this black islet, just clears south of this rock; the only danger is the anchorage space.

At the head is a pond into which boats pass at high water and find shelter from onshore winds. The north entrance point is foul for 150 yards.

Famish-gut Island, about 50 feet high, lies 300 yards off the north head. A shoal, with 12 feet water on it, lies 870 yards N. 70° W. (N. 42° W. mag.) from the west point of Famish-gut Island.

Anchorage may be had with good shelter from winds between S. by W. and West off a deep cove on the south shore in 8 fathoms, mud, and in summer under any circumstances.

Water may be procured from the stream draining a large lake that falls into this cove.

Tides.—It is high water, full and change, in Famish-gut at 8h. 4m.; springs rise 7 feet, neaps $4\frac{1}{2}$ feet.

Stone Island, 30 feet high, is an isolated white rock 200 yards square, lying $1\frac{1}{2}$ miles north from Brine Islands. It is surrounded by sunken rocks that form a nearly continuous chain to Trinny Cove Islands. The only passage through is $\frac{1}{2}$ mile south of this island, nearer than which it should not be approached.

Black Rock, isolated and 10 feet high, lies halfway between Stone Island and the shore.

Trinny Cove Islands lie N. by E. of Stone Island. The rocks and shoals are almost innumerable, and there is no passage among them. The most conspicuous are Grassy Island, the northernmost, flat and covered with grass; Woody Island, the highest, dome-shaped, with a tuft of trees at the summit; Red Rock, a conical islet of a reddish color; and Whales Back, the nearest inshore.

The bank on which these shoals lie falls suddenly on the west side, the depth increasing from 30 to 60 fathoms in $\frac{1}{2}$ mile.

Directions.—To keep outside or west of all shoals, Fox Island should be kept open west of Ram Islands, bearing S. 2° W. (S. 30°

W. mag.). In foggy weather, a vessel should not stand in to a depth of less than 60 fathoms.

It is not advisable for a stranger to take the passage eastward of the group.

The Coast trends N. by E. from Famish-gut Point, with deep coves and wooded hammocks 310 to 395 feet above high water, backed by the conspicuous serrated ranges Kite and Doe Hills.

The Tickles, $1\frac{1}{6}$ miles from Famish-gut Point, are a cluster of rocky islets sheltering a space large enough for a few fishing boats, which enter between the two northern rocks.

Burnt Head, 2 miles from Famish-gut Point, is a flat-topped, isolated range, with a peak at each end 180 feet above high water.

Burnt Head Sunker, lies 300 yards from Burnt Head Point, covers 4 feet at high water, and is bold-to on the west side. A shoal, with 12 feet water, is 300 yards N. 8° E. (N. 36° E. mag.) from it.

Shag Roost, 66 feet high, is a conspicuous conical islet $\frac{1}{2}$ mile from Burnt Head. Though small, the white color shows plainly against the land. There is no passage between it and the shore except for small vessels.

Winging Rock, 3 feet above high water, is $\frac{1}{2}$ mile S. 79° W. (N. 73° W. mag.) from Shag Roost, and is steep-to on the west side.

A group of rocks that cover, and shoals, extend $1\frac{1}{2}$ miles westward of Winging Rock, and there is no passage among them, but vessels must keep outside all.

Tom Sheaves Rock, with 3 fathoms water, is the southwestern of these dangers, and lies $1\frac{1}{2}$ miles N. 31° W. (N. 3° W. mag.) from Famish-gut Island.

Big Sunker, that covers one foot at high water, is the western, situated 2 miles N. 14° W. (N. 14° E. mag.) from Famish-gut Island. A shoal with 7 feet water lies $\frac{1}{2}$ mile N. 48° W. (N. 20° W. mag.) from Big Sunker, and sunken rocks extend from the latter 600 yards S. by W.

Northwest Rock covers 4 feet at high water, and is the NW. extreme of a line of shoals surrounding Big Sunker; it lies $\frac{1}{2}$ mile N. 8° E. (N. 36° E. mag.) from Big Sunker.

Middle Rock, the NE. of these shoals, 550 yards S. 84° E. (S. 56° E. mag.) from Northwest Rock, covers 2 feet at high water, and is steep-to on the north side.

Little Pinch-gut, $1\frac{1}{2}$ miles from Shag Roost, affords good shelter for small craft. It is fronted by Tinker Island, 41 feet high, and Green Island, 30 feet high, both barren rocks, the former nearly joined at low water to the north point, and the latter facing the middle of the bay.

A narrow passage between shoals leads to the anchorage, and only one course can be pursued in safety.

Keep close to the SW. point of Tinker Island to avoid a rock, with 4 feet water 200 yards off. Then steer to pass 100 yards north of the east extreme of the rocks off Green Island, and when Burnt Head summit opens south of Green Island, that mark kept on will lead to a well-sheltered anchorage in 4 to 6½ fathoms, gravel, fair holding ground.

Tides.—It is high water, full and change, in Little Pinch-gut Harbor, at 7h. 51m.; springs rise 7 feet, neaps rise 5 feet.

Great Pinch-gut, a bay encumbered with shoals and affording no shelter, lies NW. of Little Pinch-gut.

Pinch-gut Point, west of the bay, is a small islet 37 feet above high water, joined to a long, narrow, sloping point.

A Rock, awash at high water, lies close to the north side, and a shoal extends 600 yards SSW., the outer knob having 5 fathoms water.

The Coast north of this point is rugged and shoal, with rocks off all the points, and should not be approached within 400 yards.

Little Harbor Island, 43 feet above high water, has two summits, but makes as a flat top. It is situated $1\frac{1}{16}$ miles NW. from Pinch-gut Point, and is continued west by low rocks $\frac{1}{2}$ mile, the western being awash at high water.

Allen Shoal, with 10 feet water in it, lies 1,200 yards S. 45° W. (S. 73° W. mag.) from Little Harbor Island, and is steep to on all sides but south.

Big Sunker, a rocky patch with three heads, shoalest with one foot water on it, occupies a space 300 yards in diameter 800 yards NW. $\frac{3}{4}$ W. from Little Harbor Island. Between this shoal and Brennan Point on the mainland are two shoals, with 4 fathoms water, at nearly equal distances from each other and the shores.

Large vessels should not take the passage between Little Harbor Island and the main.

Brennan Point, $1\frac{1}{4}$ miles nearly from Pinch-gut Point, is formed by a group of low rocks off the turning point of land under the high range over Great Pinch-gut, the summit of which, 675 feet high, makes as a square hummock from the southward, while the coast range is flat. The northern rock is 4 feet above high water.

Little Harbor, fit for small craft only, is situated $1\frac{1}{4}$ miles NE. of Brennan Point. Only 12 feet can be carried in at low water, and mid-channel must be kept throughout to avoid rocks on either hand. On the south side a rock that covers 5 feet, lies 60 yards off shore, and a shoal, with 4 feet water, off a rock that covers, at the same distance off the north shore, leaving between a passage only 60 yards wide.

Anchorage may be had between the first fishing stages or immediately after they are passed, for the water shoals suddenly at the inner stages.

Salls Island, 29 feet high, is 1,200 yards to the northward of Little Harbor, close to the mainland. An islet, 8 feet above high water with a rocky spit west of it, lies close west of Salls Island.

Sly-boots, a rock with 5 feet water, is 1,050 yards S. 59° W. (S. 87° W. mag.) from Salls Island.

The summit of Butler Head, open west of Woody Island N. 6° W. (N. 22° E. mag.) clears west of this rock.

Little Harbor Head, 750 yards from Salls Island, is a sloping point, from a round wooded hillock 125 feet high, and is bold to all around.

Island Cove Head, 1,300 yards north of Little Harbor Head, is a perpendicular cliff 75 feet high, backed by a wooded hummock that shows conspicuously from the southward.

La Manche, $\frac{1}{2}$ mile deep and $\frac{1}{4}$ mile broad, runs NE. of Island Cove Head. The land in the neighborhood consists of high barren ranges, the culminating point over the head of La Manche surmounted by a cairn 615 feet above high water. On the peninsula forming the western shore the hills are 230 feet high in the background, gradually decreasing in height, in a series of hummocks to the point. Numerous valleys intersect these hills, down many of which streamlets run from ponds situated between the hills.

Lead Mines are situated on the eastern shore of the bay, and the buildings show out prominently from the westward. A wharf has been erected in a small cove below the mines where small vessels can load, but affords no shelter from onshore winds.

Anchorage may be obtained in 6 or 7 fathoms, gravel, fair holding ground, with shelter from winds from NW. through north and east to south.

La Manche Head is a wooded head, forming the west point of entrance. Some low rocks lie off it, steep to on the west side, and about 200 yards from the shore.

A Rock, that covers 5 feet, lies 100 yards off the western shore, $\frac{1}{4}$ mile from La Manche Head.

Woody Island, 92 feet high, is the south extreme of a group of islands and rocks off the peninsula, west of La Manche, that divides it from Little Southern Harbor. Between this group and the main are numerous sunken rocks and shoals, completely shutting the passage. The south and west sides of the group may be approached to within 200 yards.

Grassy Island, 65 feet high, forms the north extreme, and is faced by black cliffs. A rock, with 3 feet water, lies 100 yards N. 14° E. (N. 42° E. mag.), from Grassy Island.

Winging Rocks, lying 800 yards N. 31° W. (N. 3° W. mag.), from Grassy Island, are two barren rocks, the southern 30 feet high and the northern 5 feet above high water. Sunken rocks lie between them and a shoal, with 7 feet, 100 yards off the north end. The south rock is bold to the southward.

Little Southern Harbor is north of Grassy Island. The best passage is between Grassy Island and Winging Rocks. On the east side of the entrance are several low wedge-shaped hummocks, joined by two low necks to the main. From the highest of these, rocks that cover extend 200 yards. The west point slopes from Butler Head, a round wooded summit faced on the north side by steep cliffs, and 201 feet above high water.

A Rock that breaks lies 150 yards off the west point, leaving a passage 400 yards wide between it and the rocks off the east shore. Both sides of the harbor have detached rocks off them, but may be approached to within 200 yards, and the head shoals 300 yards from the high-water line.

Anchorage may be obtained anywhere within the line of the points, but the best holding ground is in 7 fathoms, gravel, just beyond a deep cove on the west shore.

Tides.—It is high water, full and change, in Little Southern Harbor at 9h. 30m. Springs rise 8 feet.

Great Southern Harbor is entered north of Butler Head, and is separated from the head of Little Southern Harbor by an isthmus 200 yards broad, nearly covered by a pond. The harbor runs 3½ miles from Butler Head, and contains some islands; the shores are steep-to, sloping from wooded ranges, and at the head is Big Pond, faced by a shingle beach, with a narrow channel into it passable by boats.

Anchorage may be had at the head in 5 to 9 fathoms, but the holding ground is bad, and the harbor is completely exposed. The best place is in 5½ fathoms, south of Tommy Sharp Rock, an islet 6 feet high, joined to the peninsula on the west side of the harbor, that separates it from Arnold Cove.

Duck Island, 56 feet high, lies ¼ mile north from Butler Head, and the same distance off the nearest cliff. It is bold-to, except off the SW. point, where a ledge with 7 to 9 fathoms extends nearly ½ mile.

Seal Islet, 43 feet high, is a small square rock close to the isthmus dividing Great and Little Southern Harbors.

A rock that covers 6 feet, with another sunken rock close-to, lies 400 yards S. 8° W., (S. 36° W. mag.) from Seal Islet, in the passage between Duck Island and the main, 400 yards from the latter. Duck Island, therefore, should be neared when taking this channel.

Goose Island, 81 feet high, is a square, grass-topped rock, faced by black cliffs, separated by a channel about 200 yards wide from the peninsula dividing Great Southern Harbor from Arnold Cove. In the channel between $3\frac{1}{2}$ fathoms water may be carried. From the west extreme a ledge extends about 1,200 yards, with depths of $6\frac{1}{2}$ to $9\frac{1}{2}$ fathoms.

Arnold Cove contains good anchorage in $3\frac{1}{2}$ to 5 fathoms for small vessels, all sheltered from winds, and for large vessels in 5 to 7 fathoms, with shelter from all but those from south to west. The eastern shore is rugged, sloping from a wooded cone 130 feet high. At the head is a shingle beach fronting a salt-water pond, and the western shore, terminating in Bordeaux Island, is fringed by rocks that cover and extend 200 yards from the shore.

Round Rock, 6 feet above high water, is the farthest off shore, and is 400 yards S. 87° E. (S. 59° E. mag.) from Adams Head.

Adams Head, 104 feet high, is a flat-topped barren mound near the south extreme of the western shore of Arnold Cove, with Adams House, a conspicuous two-storied dwelling, at the base, that shows out well to all parts of the head of Placentia Bay.

Bordeaux Island, 138 feet high, wooded and bluff, is separated from the main by Bordeaux Gut, a narrow passage, with water enough for fishing boats at low water. A remarkable quartz vein runs down the cliffs near the SW. point of the island.

A Rock that covers one foot lies between the east extreme of Bordeaux Island and Adams Head, a third of the distance across from the latter.

Come-By-Chance Bay, entered at 2 miles north of Bordeaux Island, affords anchorage as convenient in depths of 16 fathoms and less, the former depth being found at one mile within the entrance to the bay.

Jonathan Lookout, a conspicuous isolated cone, 712 feet above high water, is $1\frac{1}{4}$ miles WNW. from Powder Horn. From this latter hill, 1,045 feet high, the range gradually decreases in height to the marsh bordering on North Harbor.

Coast.—Rocks extend a short distance from Come-By-Chance Point. The coast then trends northward round Holletts Cove, which is 600 yards wide and 400 yards deep, with several sunken rocks near the shore. A reef that dries at low water, with sunken rocks at the extreme, extends 250 yards SSE. from the west entrance point of this cove.

Southern Head, a wooded promontory 125 feet high, projects a short distance from the line of the coast, at $\frac{1}{4}$ mile westward of Come-By-Chance Point. The shore from this to North Harbor is fringed by small islets and sunken rocks, and must not be approached nearer than 300 yards.

North Harbor.—The east point of North Harbor is $1\frac{1}{2}$ miles, NW. from Come-By-Chance Point; the harbor is $4\frac{1}{2}$ miles deep and 1,800 yards wide at the entrance.

Rocks that almost cover at high water lie close to the east shore, 800 yards north of South Point.

Emberley Point, 700 yards farther northward, may be easily distinguished by a white house on it.

A cove to the eastward of Emberley Point, surrounded by rocks, that extend 200 yards from the beach, affords good anchorage with all winds, except those from South to WSW., in a general depth of $5\frac{1}{2}$ fathoms.

Sall-the-maid Island is 2 miles within the entrance, and off the west entrance point of this cove, to which it is nearly joined by rocks. It is 70 feet high, and composed of gray rocks covered by wood. From it sunken rocks extend S. by W. for a distance of 300 yards. Northward of this island shoal water extends 200 yards from the shore; and several rocks, some of which cover, lie within that distance. Charley Rock, the highest of these, is 9 feet above high water, and lies nearly midway between the island and the head of the harbor.

The west shore of North Harbor may be approached to 100 yards, except in the coves.

Jigging Cove lies on the west shore nearly 2 miles from the entrance, and is shallow to the mouth.

Goose Island, about 40 feet high, wooded and flat, forms the north entrance point, and separates it from Goose Cove, also shallow to the line of the outer points. A rock lies a short distance from the south extreme of Goose Island.

Anchorage for large vessels may be had anywhere within the entrance of North Harbor according to the depth desired, but it must be borne in mind that the water shoals rapidly from 10 to 5 fathoms off Molasses Point, north of Goose Cove.

North Harbor Point, the west entrance point of North Harbor, terminates on the eastern side in a small, nearly detached, rocky peninsula, 31 feet high, off the south extreme of which lies a sunken rock.

North Harbor Rock, with 6 fathoms water on it, lies 600 yards S. 56° W. (S. 84° W. mag.) from North Harbor Point.

Baker Cove lies NW. of North Harbor Point. It is 1,400 yards wide and 1,000 yards deep, and affords anchorage with offshore winds in $4\frac{1}{2}$ to 9 fathoms, sand. Rocks that cover extend a short distance from the east entrance point of the cove, and shoal water extends a short distance from the shore and 100 yards from Baker Point, which is a wooded bluff about 120 feet high, projecting 600 yards from the coast NW. of the cove.

At the head of Baker Cove are two beaches of reddish shingle, separated by a red cliff, facing a small wooded hillock.

Coast.—The coast from Baker Cove trends NW. for $1\frac{1}{4}$ miles to Placentia Mans Point, with slight indentations, thence with a slight change in direction, more to the north, for 2 miles, to a low wooded promontory faced by shale cliffs, from the foot of which the shore dries a short distance. A few houses are built on the coast between Baker Cove and Placentia Mans Point.

Black River, from which the station derives its name, is entered at $\frac{1}{4}$ mile northward of the point on which the station stands, and may be approached to 200 yards by vessels drawing 12 feet water.

A Telegraph Station, surrounded by well cultivated ground, is situated on the south entrance point of Black River; it is in connection with the Anglo-American Telegraph Company.

Ice.—Black River is generally frozen toward the latter end of January and clear by the middle of April.

Vicuna Island, 30 feet high, lies 600 yards WSW. from the station point; it is about 200 yards in diameter, and covered with grass over gray rock. Martin Morrissey Rocks, a small group about 200 yards in diameter, are nearly joined to the west extreme of Vicuna Island, the highest being 6 feet above high water.

A Rock 4 feet high is situated 200 yards south of Martin Morrissey Rocks, and 100 yards farther in the same direction lies a rock that dries 4 feet at low water.

A Rock that dries 6 feet lies $\frac{1}{4}$ mile S. 82° W. (N. 70° W. mag.) from Vicuna Island, and a rock, with 3 feet water, lies between that island and the station point, 200 yards from the latter.

Mouse Island is small, covered with grass, and 26 feet high; it is $\frac{1}{4}$ mile NW. by W. from Vicuna Island.

Pipers Hole is entered through a channel 400 yards wide, lying 400 yards westward from Mouse Island, and extends in a north-westerly direction 4 miles to the fresh-water brook at the head.

At 2 miles within the entrance is a sharp bend, 150 yards wide, round Cape Pine, through which the tide runs about 3 knots an hour at springs. The arm then expands into a shallow basin, a mile long and 1,200 yards wide, the greater part of which dries at low water. In it are some islands, Birchy Island, the highest, being 62 feet high and covered with wood. From the upper part of this basin a narrow stream extends to the head, the northern bend being nearly filled with boulders.

Southwest of the entrance to Pipers Hole are Rocky Cove, a small curve in the coast lined with boulders, and Cock and Hen Cove. Shoal water extends a considerable distance off this cove.

Desolate Point is the extreme of an isolated hill, 200 feet high, covered with moss, that forms the turning point into the sound

from Pipers Hole. Bittern Cove, a slight indentation with a shingle beach, is south of this hill. From this the coast trends in nearly a straight line S. by W. for a distance of 6 miles, the northern part sloping from high hills, and the coast line of rocks being occasionally varied by small beaches of shingle.

Toby Lookout is the highest of the hills immediately bordering on the coast, and attains an elevation of 1,026 feet. This range recedes from the coast in a westerly direction, and becomes barren in the interior.

White Hills, another bare range, the highest of which is 1,185 feet above high water, are situated $2\frac{1}{2}$ miles inland, and connected with the western part of the range from Toby Lookout. As this range recedes from the coast, lower, wooded, and mossy hills fringe the shore.

Anchorage may be obtained at the head of Placentia Bay, north of Placentia Mans Point, but large vessels should not bring Bloody Point, the north extreme of Sound Island, to bear south of S. 63° W. (West mag.), as the water shoals rapidly from 14 to $3\frac{1}{2}$ fathoms.

Sound Island has the shape of an irregular rectangle, $3\frac{1}{2}$ miles long and $2\frac{1}{2}$ miles broad. The characteristic features are long hills 460 to 360 feet high, covered with white moss, and patches of small wood in the valleys. A sharp peak, 381 feet high, rises near the north extreme, and the summit, when seen from the western part of the sound, appears an inclined plane, with a steep fall to the western shore of the island. The east shore is formed of shale cliffs, the debris from which has accumulated at the base, and prevents landing, except in fine weather.

Catens Cove, a small bight, lies in the middle of this shore, and is nearly filled with rocks. Net Rock, 3 feet above high water, is north of this cove, and is bold-to on the east side.

Some white cliffs are near the south extreme. Woody Island Shoal, with $5\frac{1}{2}$ fathoms water, extends 1,300 yards SE. by E. from the SE. extreme of the island.

The south shore curves round Muddy Hole, a shallow cove, and thence with a broad sweep to Upper Sandy Point, the SW. extreme of the island. This point projects 600 yards from the line of coast, and is surmounted by a hill 118 feet high, covered with yellow moss. This hill being lighter in color than the mainland can generally be seen when open of Woody Island. The west shore of Sound Island is almost straight, and is bordered by a beach of shingle in front of the steep slopes from the summit. Bloody Point, at the north extreme, is steep-to and surmounted by a dark wooded hill.

Jeffrey Cove, the most westerly of three on the north side of Sound Island, is 1,800 yards wide and 600 yards deep. There are a few houses at the head of the cove.

A Rock with 7 feet water lies in the middle, nearly between the line of the extreme points, and a shoal with $3\frac{1}{2}$ fathoms water lies 200 yards northward of the rock. Bittern Cove Beach open north of Bloody Point, bearing N. 63° W. (N. 34° W. mag.), leads east of this shoal.

Maggotty Cove is separated from Jeffrey Cove by Shepherd Point, east 150 yards from which is a sunken rock. This cove is 800 yards broad and 350 yards deep. It is surrounded by houses, and affords good anchorage for a few small vessels in 5 to 12 fathoms. New Town, east of Maggotty Cove, may be distinguished by the church, a plain white wooden building, and several two-storied white houses. A rock that dries 4 feet lies in the middle of the bight off New Town, between the line of the outer points, and 150 yards from the shore.

Irishtown, SE. of New Town, is at the head of a cove 1,400 yards wide and 600 yards deep. A few houses are built near the head. The shores are bold, except off Brimstone Point SE. of the cove, from which rocks extend 150 yards.

The Sound, between Sound, Woody, and Barren Islands on the east side, and the mainland on the west, is 500 yards wide at the narrowest part. It is clear in mid-channel between Sound Island and the main, and the eastern shore may be neared to 100 yards. A few rocks lie off the mainland, but none so far as 200 yards distant.

The channel between Sound and Woody Islands, $\frac{1}{2}$ mile wide, is clear, and affords excellent anchorage in 7 to 19 fathoms. The extreme points are connected by bars with $6\frac{1}{2}$ fathoms water on them, and there is a hole in the middle with 19 fathoms, deepest water. Anchorage may also be had in the Sound according to the length of the vessel.

Woody Islands consist of two large and some small islands. Woody Island, the largest, is 2 miles long and nearly a mile wide, and is surmounted by wooded hills, the highest being flat-topped and 327 feet high. A round hill, 316 feet high, lies close west of the highest. The east shore falls steeply, and several small coves lie at the base of the hills. Hardy Rocks are a small cluster $\frac{1}{4}$ mile S. by W. from the north extreme of the island. The highest is 7 feet above high water, and they are steep-to on the south side.

Crève Islets lie off the west shore, and are nearly joined to each other and Woody Island at low water. They shelter a small cove almost filled with rocks known by the name of Woody Island Harbor, but there is scarcely room for even a very small vessel to

swing clear of danger. A settlement is situated here, with a church and schoolhouse. The largest of Crève Islets is partially wooded and grassy, 25 feet high, and lies 600 yards from the mainland. There is deep water 200 yards distant from the west side.

Anchorage for small vessels may be had south of these islets in 8 fathoms.

Tides.—It is high water, full and change, at Woody Island at 8h. 9m.; springs rise 7 feet; neaps rise $4\frac{1}{2}$ feet.

A Rock that dries 5 feet lies a short distance from the south extreme of Woody Island.

Little Woody Island is 500 yards southward of Woody Island, to which it is joined by a bar with one to 3 feet on it at low water. It is about $\frac{1}{2}$ mile long, $\frac{1}{4}$ mile wide, and is partially wooded over gray rock, the summit 183 feet above high water, falling in a steep bluff to the SE. extreme. Several pinnacle rocks are joined to the shores, and a sand spit, that covers at high water, extends 200 yards from the NW. extreme. The other sides are steep-to.

Shag Rock is a small pinnacle 15 feet high, lying 600 yards from the SW. extreme of Woody Island and about the same distance from the mainland. A shoal extends from the south extreme.

Sugarloaf Island is about 250 yards in diameter, round, wooded, and 101 feet high. It is $\frac{1}{2}$ mile from the SW. extreme of Woody Island, and should not be approached nearer than 200 yards.

La Plante Sunker, awash at low water, lies at the extreme of a bank which extends 650 yards SSW. from Sugarloaf Island. Shag Rock, open either side of that island, leads north and south of this danger.

La Plante is a shallow indentation on the mainland, a mile southwestward of Sugarloaf Island. This cove nearly dries at low water, but boats can enter and obtain water after half flood. An islet 27 feet high and covered with grass is situated close off the north entrance point.

Barren Island, $1\frac{1}{2}$ miles southwestward of Woody Island, is separated from the mainland by a channel 700 yards wide. It is nearly 4 miles long and $1\frac{1}{2}$ miles broad at the NE. extreme. It is in the shape of an irregular triangle, the apex being at the SW. extreme.

Two peninsulas extend from the east side. The northern forms Barren Island Harbor and the north part of Western Cove, being connected to Barren Island by a beach of shingle between the heads of these coves. Western Cove Head, the other peninsula, is joined to the island by a low, marshy neck, on which are two ponds that leave only a short distance between each other and the sea on each side of the neck. There are three principal hills. The summit, 490 feet above high water, is bare; it lies near the middle of the

island, and from the southward appears as an inclined plane with the steep side to the westward. A round, wooded hill, 427 feet high, is situated close west of Western Cove Head, and a bare hill, 432 feet high, lies close to the NE. extreme.

The north shore falls steeply from a chain of wooded hills, and is clear of danger beyond 200 yards. The NW. extreme is a low, grassy plateau, from which a bar with 5 fathoms water extends to the mainland. Two small shallow inlets are situated, respectively, $1\frac{1}{2}$ miles from the south extremity and a mile from the north end; both of these are on the western side. The entrances are marked by white cliffs, and fishing craft haul into them for repairs.

The south point of Barren Island terminates in a small gray islet, 29 feet high, covered with grass and surmounted by a conspicuous single tree.

Barren Island Harbor is 900 yards long, 150 yards broad, and affords shelter to small vessels from all but easterly winds. The anchorage is in 6 to 8 fathoms, and the shores are bold-to. A considerable settlement lines the shores, and an old wooden church, with a belfry near, stands on a mound west of the head. On the west side the harbor is faced by reddish landslips. The entrance may be recognized by a shingle beach and some low rocks close to Barren Island. The east entrance point of the harbor must be given a wide berth when rounding, and the east side of the peninsula forming it is foul for nearly 200 yards.

Western Cove is between the two peninsulas and Barren Island. Western Cove Head rises to a sharp peak 223 feet high, is covered with an alternation of wood and grass, and its outer coat is marked by brown landslips. Several round wooded hills lie south of the summit. James Point, north of the entrance, is steep-to, but from West Point a bank with 10 fathoms extends 400 yards. A shoal, with 3 fathoms water, lies S. 73° E. (S. 45° E. mag.) a little more than 200 yards from West Point.

The northern part of the cove is $\frac{1}{2}$ mile deep, $\frac{1}{3}$ mile wide at the entrance, and narrows to the beach, which is 250 yards broad at the head. Shoal ground extends 250 yards from the beach, but south of that the depth ranges from 10 to 16 fathoms in the middle of the cove.

The southern part is 750 yards deep, 400 yards wide at the entrance, and terminates in a shingle beach 200 yards wide at the head. Glindon Cove is a small bight on the shore west of the entrance, with a few houses round it. Glindon Rock, a small bare rock 3 feet above high water, lies close to the shore, south of Glindon Cove.

A few houses are also built round Western Cove.

Anchorage may be had in either arm of the cove, according to the direction of the wind, in 12 to 16 fathoms in the northern part or in 20 fathoms in the southern part.

Duck Rocks, a ledge of dark sharp rocks, extend from the southern extreme of Western Cove Head. The highest is 61 feet and has a hole through it; the outer is a small gray rock 12 feet high and steep-to.

Back Cove, close west of Duck Rocks, is nearly filled with Back Cove Islets, a castellated group, reddish in color, the highest of which is 75 feet above high water.

Green Island, lying 850 yards southwestward of Barren Island, is 55 feet high and covered with grass over dark gray rock. It is 150 yards in diameter, and has no danger beyond 100 yards from it except on the west side.

Green Island Rock, with 8 feet water, is the NW. extreme of a bank extending 300 yards from Green Island and falling suddenly to deep water.

Gulch is a basin 1,200 yards long and 300 yards broad, on the mainland shore west of Barren Island, and nearly $3\frac{1}{4}$ miles southward of La Plante. The entrance is only a few yards wide and is filled with large rocks, leaving no passage, even for a boat, at low-water springs.

Ship Island, a mile SW. of the south extreme of Barren Island, is nearly a mile long, 600 yards broad, and is almost rectangular in shape. The summit, situated near the middle of the west shore, is 248 feet high, round, and covered with wood. Several other hills rise in the island, some bare and others wooded, joined by green marshes or plains. A few white patches mark the cliffs near the north extreme. The shores are generally bold, with small cliffs. There is only one danger as far as 200 yards from the shore. A rock awash at low water lies 200 yards from the middle of the east side of the island. Burgeo Island, seen open of the east part of Ship Island and bearing S. 23° W. (S. 51° W. mag.), leads east of this rock.

Shag Rock, $\frac{1}{4}$ mile S. 68° W. (N. 84° W. Mag.) of the SW. extremity of Ship Island, is 12 feet high, 150 yards in extent, and steep-to. A shoal with $5\frac{1}{2}$ fathoms water on it lies S. 31° E. (S. 3° E. mag.), a little more than 200 yards from Shag Rock.

Bell Island, 800 yards S. by W. of Ship Island, is formed of brown cliff, covered with wood. It is wedge-shaped, the apex, 143 feet high, being on the south side. A shingle beach lines the NE. side. The island is so named from a remarkable rock, about 20 feet high, shaped like an inverted bell, situated close to the south extreme, that shows prominently when seen from north and south or when close to the island.

A rock awash at low water, with another rock close north of it, lies about 100 yards from the east shore.

Great Sandy Harbor.—The approach to Great Sandy Harbor may be readily distinguished by the offlying islands, and by a wooded hill with a bare top 256 feet above high water, which lies NE. of the entrance. A wooded islet 53 feet high lies close south of the hill, and a bare rock 6 feet above high water is south of the islet. The west side of the entrance is formed by a wooded peninsula nearly a mile long and 180 feet high. Near the north extreme is a bluff point with a small bight in it.

The harbor is entered through a channel not quite 200 yards wide, between the base of the hill and the bluff point just described. Immediately within the entrance an arm extends NE. for 450 yards, and is 250 yards broad, with $3\frac{1}{2}$ fathoms in the middle, but only $2\frac{1}{2}$ fathoms in the entrance. Rocks lie close to either shore.

The main harbor trends SW. for 800 yards, with a breadth of 350 yards, then bends sharply to the NW., in which direction it extends $1\frac{1}{2}$ miles, expanding to 1,300 yards wide for nearly $\frac{1}{2}$ mile, when the basin contracts to the entrance of a stream 100 yards wide. Nearly the whole of this basin dries at low water, leaving a narrow passage for boats only close to the shore. In the first bend not more than 6 feet can be carried. The hills surrounding the harbor are partially wooded and slope gradually to the southwestern arm.

Civil East Cove is a slight curve in the SE. coast of the peninsula, protected by Civil East Island, and affording shelter to small fishing craft in $2\frac{1}{2}$ fathoms. A few houses stand on the shore, surrounded by small patches of cultivation. A rock with 6 feet of water on it lies midway between the island and the main.

Civil East Island is about 40 feet high, flat, and partly wooded. It is 400 yards long, and a rock awash at low water lies close to the SW. extreme.

Anchorage may be had, with good holding ground, on a plateau of sand lying between Civil East Cove and the entrance to Great Sandy Harbor, in from $4\frac{1}{2}$ to 6 fathoms.

Tides.—It is high water, full and change, in Great Sandy Harbor at 8h. 9m.; springs rise $6\frac{1}{2}$ feet; neaps rise 5 feet.

Great Coat Island, 45 feet high and 100 yards in diameter, round and wooded, lies 250 yards SW. by S. of the south entrance to Civil East Cove. There is a clear passage west of it, but a rock that dries lies a short distance from the SW. extreme.

Little Sandy Harbor is entered through a channel 200 yards wide, south of Great Coat Island, between the cliffy SW. extreme of the peninsula dividing it from Great Sandy Harbor and Stearin

Rock, a flat bare islet 5 feet above high water. Within the entrance the harbor expands to a basin 600 yards in diameter, with $5\frac{1}{2}$ fathoms in the middle, decreasing gradually in depth to the shore, except in the SW. corner. From this side a small arm extends to the westward and is shallow to the entrance. Water may be procured from a brook at the head of this arm, but the approach is made difficult at low water by bowlders lying off it. A wooded islet about 40 feet high nearly joins Stearin Rock to the south side of the entrance.

Nan Point, 1,200 yards SE. by S. of the entrance to Little Sandy Harbor, is a small sharp projection, steep-to. The intervening coast consists of two small coves, with shingle beaches, between otherwise rocky shores.

Anchorage for large vessels, with shelter from offshore winds, may be had off this coast in 6 to 7 fathoms at 400 yards from the shore.

Castle Islet, a small square rock 13 feet high, lies close to the shore off the north entrance point of Davis Cove.

Little Burgeo Island is 250 yards SE. by S. of Castle Islet. It is 900 yards long, 600 yards broad, and 227 feet high. It is flat in outline, faced by steep cliffs, and there is a small cove on the south side. There is barely passage for a boat between this island and the main at low water.

A Shoal, with 12 feet of water, lies 100 yards from the NE. extreme.

Davis Cove is entered south of Calls Point, 1,000 yards SW. from Castle Islet. A rock that dries 4 feet lies 100 yards south of the point. This cove is 600 yards wide and 200 yards deep, and affords good shelter to fishing craft with offshore winds.

Water may be obtained from a large stream at the head.

Coast.—The coast, which is wooded over brown cliffs, curves generally to the southwestward from Davis Cove for a little more than a mile to Butts Hole, a small cove with a few houses round it, and a rock that dries 6 feet at low water in the middle. A conspicuous waterfall is situated on the south side of this cove.

Parfrey Point is $\frac{1}{2}$ mile from Butts Hole, and is a small projection, 105 feet high, faced by gray cliffs. Parfrey Shoal, with $4\frac{1}{2}$ fathoms water on it, lies S. 17° E. (S. 11° W. mag.), distant 267 yards from this point.

Burgeo Island is 1,200 yards S. by W. of Little Burgeo Island, and separated by a clear channel 1,100 yards wide from the mainland, surmounted by a remarkable sharp peak 416 feet high, and two smaller peaks to the southward of it, named Hares Ears, about 350 feet high. The island is $1\frac{1}{4}$ miles long and $\frac{1}{2}$ mile broad. The east shore is steep-to, but a rock with 5 feet of water on it lies 100

yards from the south extreme. A cove 400 yards deep is situated on the west shore of the island, just below the summit, off the north entrance point of which is a small islet with a sunken rock off it.

Cross Rocks, 12 feet above high water, lie nearly 200 yards N. 76° W. (N. 48° W. mag.) from the north entrance point of this cove, and are surrounded by sunken rocks. A shoal with 15 feet water on it lies 100 yards S. 11° W. (S. 39° W. mag.) of these rocks, and a bank, with less than 10 fathoms, extends 250 yards farther in the same direction.

Near the north extremity of Burgeo Island the coast curves into a small bay, surrounded by a beach of shingle, between low points of cliff. The wharf, stores, houses, and flagstaff of a small trading establishment are built here, and there is good anchorage off the wharf in 14 fathoms for small vessels. Vigors Island, with a flat, wooded summit about 120 feet high, falls in steep cliffs on all sides but the north, where a grassy point, fringed by boulders and shoal water, extends 100 yards. Vigors Island should not be approached nearer than 200 yards on the north side. The channel between the NE. extreme of this and Burgeo Island is not quite 200 yards wide. On the eastern side is a square islet, off which lies a sunken rock.

White Islands are a group occupying a space $1\frac{1}{2}$ miles long and nearly $\frac{1}{2}$ mile broad, lying 2 miles SE. of Burgeo Island, the channel between deepening to 151 fathoms. There are three large islands, several smaller islands, and many rocks.

Greens Island, near the north extreme, is 110 feet high, round, and covered with stunted trees, interspersed with grass over gray rock. Rocks and shoals extend from the south side of the island for 400 yards, the highest being a square islet about 40 feet high, off which are two rocks. A small rock lies close to the north extreme of the island, and a large shoal extends NW. of the chain of rocks south of Greens Island.

Gooseberry Island, 200 yards NW. by N. of Greens Island, is about 40 feet high, flat, and covered with grass over reddish-gray rock. Sunken rocks extend 200 yards from the west extreme.

Deepwater Bank, with 7 fathoms water, lies 800 yards N. 16° E. (N. 44° E. mag.) from Gooseberry Island, and Rock of the Bank, with the same depth, bears S. 87° E. (S. 59° E. mag.), distant 1,400 yards from Greens Island.

Stearin Rocks are the cluster next SW. of Greens Island. They are nearly connected at low water, and occupy a space 200 yards in diameter.

A Reef, with two heads that just dry at low water, bears S. 68° E. (S. 40° E. mag.), distant 250 yards from the highest of these rocks.

Middle Dock Islands are 200 yards SW. by W. of Stearin Rocks, and are 400 yards in diameter. The two southernmost are conical, with grassy summits, the western and highest being 37 feet above high water. These two have no dangers off their SE. sides. The rest of the group are low, and the northern covers at high water, but there are no outlying dangers beyond 200 yards distance from the group. There is a clear passage between these and Stearin Rocks.

Anchor Rock, bare, flat, and 8 feet above high water, is separated from the south side of Middle Dock Islands by a clear channel 200 yards wide, and is steep-to. A sunken rock lies midway between it and Northwest Island.

Northwest Island, 115 feet high, and 400 yards SW. by W. of Middle Dock Islands, is formed of several wooded hillocks covering dark rock, the highest falling steeply to the NW. extreme. Some small pinnacle rocks lie close-to, but there is no sunken danger near, except on the east side.

West Island, lying 450 yards southward of Northwest Island, is wedge-shaped, 300 yards long and 200 yards broad. The summit, which is wooded, falls steeply to the north extreme, and is 115 feet above high water. A green mound, with a conspicuous patch of turf near the summit, is joined to the south extreme by a beach of shingle. A ledge of rocks extends 200 yards from the east side that dries only at low water springs.

Western Rock, the western of White Islands, is a gray islet 24 feet high, with a little grass near the summit. A reef of rocks extends 200 yards north, and there are rocks between it and West Island, but no danger beyond 200 yards from them. A rock, awash at high water, lies close south, and a shoal, with 7 feet water on it, is a short distance from the SW. extreme. A rock that dries is a little more than 200 yards N. 59° W. (N. 31° W. mag.) from West Island.

Mackerel Shoal, with 14 feet water, bears N. 68° W. (N. 40° W. mag.), distant about 400 yards from West Island.

Harry Rock, with 8 fathoms water, lies S. 70° W. (N. 82° W. mag.), distant 700 yards from Northwest Island.

Big Shoal, with 4 fathoms water, bears S. 25° W. (S. 53° W. mag.), distant 950 yards from Western Rock, and is the highest part of a bank 200 yards in diameter within the depth of 10 fathoms.

Shoal Bank, with 14 feet water, lies $1\frac{2}{3}$ miles S. 56° W. (S. 84° W. mag.) from Western Rock, and is a small pinnacle, with deep water close-to.

Coast.—The coast from Parfrey Point, after a slight curve close west of that point, trends in nearly a straight line to the entrance of Clatise Harbor, falling steeply, in many places perpendicularly, from wooded hills near the shore and gray moss-covered hills in the background.

Red Point Shoal, with $5\frac{1}{2}$ fathoms water, lies 850 yards S. 53° W. (S. 81° W. mag.) from Parfrey Point, and 200 yards from the shore.

Skippers Brook, a conspicuous waterfall, enters the sea at $1\frac{1}{2}$ miles southward of Parfrey Point. Skippers Brook Rock, with 10 fathoms water, lies $\frac{1}{2}$ mile N. 82° E. (S. 70° E. mag.) from the point of the cove into which the brook runs.

Ladder Cove, a small bight, lies one mile southward of Skippers Brook, and $\frac{3}{4}$ mile farther south is Coffin Cove, 300 yards deep, with a beach of shingle at the head.

Barren Point, $1\frac{1}{2}$ miles south of Coffin Cove, is covered with moss and surmounted by a small peaked hill 216 feet high. Joss Brook falls into the sea, from an elevation of about 30 feet, close north of this point.

Clatise Harbor is nearly 800 yards wide in the entrance, between Gunning Point on the north side and Clatise Harbor Head on the south. The harbor expands to 1,600 yards broad, and extends a mile in a southwesterly direction to two arms that continue it to the westward. Culleton Head, north of the entrance, is a bare round hill, 452 feet high, falling steeply to the eastward. A few houses are built on the north shore, immediately within the entrance. A large brook runs into a cove on the north shore, $\frac{1}{2}$ mile SW. of Gunning Point, and a rock that dries is situated close to the east entrance point of that cove.

Northwest Arm extends to the southwestward $1\frac{1}{2}$ miles, with a breadth of 400 yards, then turns to the north, forming a cove 400 yards in diameter.

Cross Rock, a small pinnacle 9 feet high, lies close to the north side of the entrance to this arm, and is nearly joined at low water to the shore of a small cove with a stream in the east corner, round which are a few houses. This rock has deep water close to the south side.

Northwest Head, the south entrance point of Northwest Arm, is a bold cliff surmounted by a round wooded hill 256 feet high. A reef that dries at low water extends 150 yards east; and a rock that dries 2 feet lies close north of this head.

A Rock that covers lies close to the east point of the cove, at the head, and shoal water fringes the north shore of that point. With these exceptions the shores of Northwest Arm are steep-to.

Anchorage may be had anywhere in the arm with depths from

16 to 18 fathoms, or by small vessels in the cove at the head in 6 to 8 fathoms. The hills on the north shore are 330 to 360 feet high, fall sharply to the sea, and are generally wooded. A hill, covered only with moss, 150 feet high, slopes to the east point of the cove at the head.

Between Northwest and Southwest Arms the coast is bold, encircling a cove into which a streamlet runs. Rocks lie close to the head of this cove.

Southwest Head is a bold bluff 175 feet high, with a small islet joined to the east side.

Southwest Arm is 1,300 yards long and 600 yards wide, between Southwest Head and the south shore; but 700 yards within the entrance it is narrowed to 300 yards by Jigging Cove Head, and continues that breadth to the westward. The NW. shore is fringed with rocks, but the SE. side is free from danger.

Shag Rock, 6 feet high, is the highest of a small cluster lying 400 yards from the south shore and 1,800 yards S. 59° W. (S. 87° W. mag.) of Clatise Harbor Head. A shoal, with $4\frac{1}{2}$ fathoms water, bears N. 65° W. (N. 37° W. mag.) distant 200 yards from this rock.

Clatise Harbor Head is the sharp extreme of a narrow promontory surmounted by a wooded hill 253 feet high. A sunken rock lies close to, and a bank, with less than 10 fathoms on it, extends 200 yards from the extreme of this head.

Coast.—The coast from Clatise Harbor Head trends S. by W. for $\frac{1}{2}$ mile to White Point, so named from the color of a small islet that forms it. A few white houses stand on the shores of the cove between this point and Clatise Harbor Head. Collins Rock, 2 feet high, lies close to the shore $\frac{1}{2}$ mile south of White Point, and Redland, a reddish cliff, south of a beach of shingle through which a stream runs, is situated 1,200 yards south of Collins Rock.

Oliver Cove is a beach of shingle 250 yards long, a little more than 2 miles from Clatise Harbor Head. Shoal water extends 100 yards from the beach, but beyond that anchorage for small vessels may be obtained in 10 fathoms, with shelter from offshore winds. A road extends from this cove to the head of Presque, nearly a mile distant, near which, about midway, is situated the Roman Catholic Church.

Oliver Rock, small and 12 feet high, lies close to the bluff south of this cove, down to which Calvary Hill slopes from an elevation of 423 feet above high water.

Mahany Cove lies south of Oliver Cove. Some rocks extend 100 yards from the south shore. A deep ravine encircles Calvary Hill, through which passes the road from this cove to the church.

The Coast from this to Grandy Point is free from danger beyond 100 yards, and is surmounted by a serrated ridge, with several sharp peaks ranging from 526 to 550 feet in height.

Grandmother Rocks are two groups of islets, separated by a clear channel 334 yards wide. The southern group contains the highest islet, which is 30 feet above high water, and bears N. 67° E. (S. 85° E. mag.), distant 1½ miles from the north extreme of Great Isle of Valen. Numerous rocks surround it.

The islets in the northern group are all above high water, the highest being 7 feet. There is deep water at 100 yards from this group.

Whales Back, a rock that dries 4 feet, bears S. 79° E. (S. 51° E. mag.), distant 1,800 yards from the north extreme of Great Isle of Valen. It is steep-to on all sides but the west, from which a shoal with 15 feet water on it extends 200 yards. This rock nearly always shows by a breaker.

Two Rocks, covering a space 100 yards long, with 4 feet least water, bear N. 17° E. (N. 45° E. mag.) ½ mile from Grandmother Rocks, and a shoal with 12 feet lies at the same distance on the bearing of N. 8° W. (N. 20° E. mag.). Two shoals, with 4½ and 5 fathoms on them, lie a little more than 200 yards southward of this shoal.

Sam Adams Shoal, with 5½ fathoms, bears N. 3° E. (N. 31° E. mag.), distant a mile from Grandmother Rocks, and a shoal with 4½ fathoms water lies nearly midway between it and the rock with 4 feet water.

Big Shoal, with 3½ fathoms water, bears S. 23° E. (S. 5° W. mag.), distant 850 yards from Grandmother Rocks. Little Isle of Valen opens east of Great Isle of Valen, bearing S. 25° W. (S. 53° W. mag.), leads east of this shoal.

Great Isle of Valen is separated from the mainland by a deep channel ½ mile wide. It is much indented and intersected by many valleys. The hills attain an elevation of 520 feet, and picturesque lakes are situated among them. The summits of most of the hills are bare, but the valleys are thickly wooded.

The island is 3 miles long, nearly 1½ miles broad, and terminates toward the north in an isolated wooded hillock 180 feet high. A rock that dries is situated close NE. of the square rock which terminates this point, and a beach of shingle lies inshore of the hillock.

Pete Cove, on the east coast, nearly 1½ miles from the north extreme, contains several islets, the eastern and highest 8 feet above high water. A rock lies between the two eastern islets, but the water is deep to the eastward. Pete Cove Head, a bare isolated hill 260 feet high, stands north of this cove.

Storehouse Cove, on the SE. coast, an indentation 800 yards deep, terminates in a small bight, 100 yards in diameter, where fishing craft find good shelter. Sugarloaf Island, a cone 43 feet high, lies in the middle of the entrance, and Blow-me-down, a conspicuous bluff 425 feet high, falls steeply to the north entrance point. Shoals fringe the shore below that hill for 100 yards.

A rock, with less than 6 feet water on it, bears S. 31° E. (S. 3° E. mag.), distant 70 yards from Sugarloaf Island, and another rock, with 12 feet water on it, lies 100 yards N. 56° E. (N. 84° E. mag.) of the first named. A rock, with 7 feet water, is situated 60 yards S. 56° W. (S. 84° W. mag.) of Sugarloaf Island. A small islet is joined to the south shore by shoal water, and the north shore is situated a smaller rock, from which two rocks that dry at low water extend to the southward.

Directions.—To enter, pass north or south of Sugarloaf Island in midchannel, and then between the two smaller islets west of it. The anchorage is in 7 fathoms, close within the islets. A small rock lies close to the shore west of the anchorage. Several houses are built at the head of this cove.

Isle of Valen Harbor, on the south side of the island, is available only for small vessels; it is sheltered by Little Isle of Valen, Dutch Cap, and Canary Isles. A wharf is situated on the east shore, alongside which vessels may lie in 5 fathoms, but the approach is encumbered with shoals.

Isle of Valen Harbor may be recognized by a flagstaff erected on a small hillock on the north side of the entrance, 38 feet above high water. The entrance is about 50 yards wide, and is clear of danger. Immediately within the harbor expands to 150 yards in diameter, and the wharf is situated on the north side of this expansion. Again narrowing, and with a sharp bend to the northward, the harbor opens into a perfectly sheltered basin 250 yards in diameter. Both outer and inner portions have an even depth of 5 fathoms, but a bar joins the opposite shore just within the narrows, with only 12 feet on it at low water, and a sunken rock lies in the middle of the bend, off two islets. The point close north of the wharf is foul for a few yards, otherwise the shores are steep-to. Small vessels may lie in perfect safety in the outer basin or alongside the wharf.

Ice.—Isle of Valen Harbor occasionally freezes during severe winters, but, the ice being as a rule thin, anchorage can generally be obtained.

Dutch Cap is a conical island, 600 yards long, 266 feet high, and composed of two parts, joined by a low narrow isthmus. The western and lower part is faced by reddish cliffs.

A channel 100 yards wide, with 6 fathoms in it, separates Dutch Cap Island from the south extreme of Great Isle of Valen.

Three rocks that cover at high water lie nearly 200 yards from the SE. side of Dutch Cap Island.

Little Isle of Valen is about $\frac{1}{2}$ mile long and 400 yards broad; the south extreme is surmounted by a cone 327 feet high, and it is separated at the north extreme from Dutch Cap Island by a passage 600 yards wide. The west extreme is low, and a short distance from it is situated an isolated rock with 8 feet water on it. A ledge 100 yards in extent, with 3 feet water on the shoalest part, lies 133 yards SE. of the south extreme.

An islet 43 feet high is nearly joined to the SE. side, and a rock with 5 feet water on it lies 200 yards from the NE. extreme.

The summit of High Lookout, over Presque, in line with the north extreme of Little Isle of Valen, leads north of this rock and south of those off Dutch Cap Island.

Canary Isles are a group of low rocks, the highest covered with grass and 23 feet above high water.

Shoals extend in all directions and almost block the channel north of these islets.

A shoal with 12 feet bears S. 79° E. (S. 51° E. mag.), distant 300 yards from the highest, and Trinity Shoal, with 9 feet water, extends 200 yards N. 56° E. (N. 84° E. mag.), from the northernmost of Canary Isles.

Net Rocks lie off the south shore of Great Isle of Valen, and are 4 feet above high water. A rock, with one foot water on it, lies 100 yards westward of Net Rocks.

Betty Island, 84 feet high, round, and covered with brushwood, is joined at low water to the SW. extreme of Great Isle of Valen. A conical hill 480 feet high lies close within Betty Island.

Coast.—The west shore of Great Isle of Valen is almost straight. Francis Cove, a small bight with a few houses round it, is $\frac{1}{4}$ mile from the south point. A sunken rock lies close to the north point of the cove. Net Rocks, one foot above high water, are joined to the shore $\frac{1}{4}$ mile north of Francis Cove, and a rock with 5 feet water is situated $1\frac{1}{2}$ miles S. 31° E. (S. 3° E. mag.) of the north extreme of the island and about 80 yards from the shore.

Grandy Point, 1,600 yards SW. of the south extreme of Little Isle of Valen, is the name of a settlement surrounding a cove nearly 200 yards in diameter, that affords good shelter for fishing craft in 4 fathoms from all winds but those from northeastward. A small islet with a house on it lies north of the cove, and the south entrance point is foul for a short distance.

Grandy Point Rock is the turning point to the westward of the reach, between Great Isle of Valen and the main; it just covers

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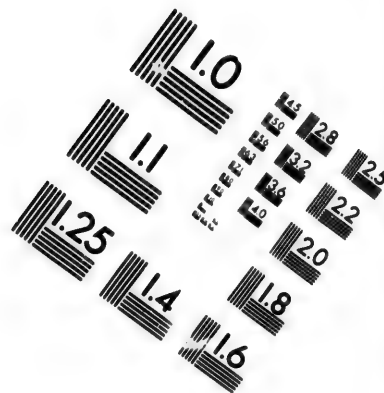
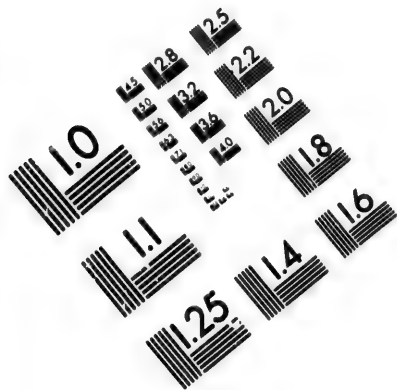
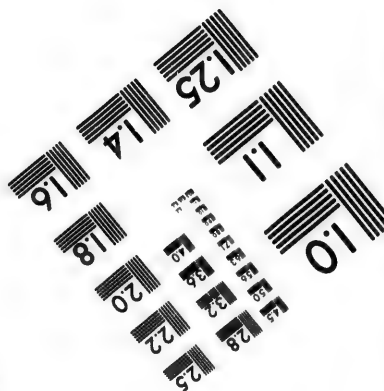
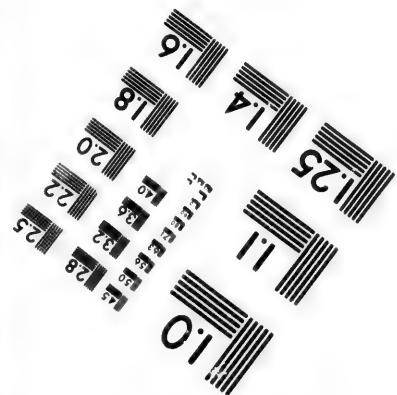
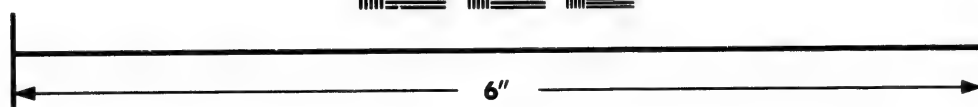
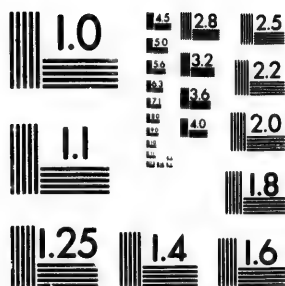


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at high water, and has foul ground extending 200 yards to the southward of it.

The land south of Grandy Point comprises a flat ridge, backed by a peaked hill 414 feet high, behind which rises another sharp peak 526 feet above high water.

Rocky Cove is $\frac{1}{2}$ mile SW. of Grandy Point Rock, and is surrounded by cliffs, at the west extreme of which a brook flows into the sea.

Rocky Cove Sunker, a small rock that dries 4 feet, lies S. 25° W. (S. 53° W. mag.), distant 250 yards from the north entrance point of Rocky Cove. Foul ground nearly joins the rock to the point, and two shoals, the outer of which has 12 feet water on it, extends eastward 400 yards from the rock.

The coast to the southward of Rocky Cove is rugged and cliffy, falling from hills covered with moss, and is foul for a short distance.

Brook Rock, with 10 feet water on it, lies 1,050 yards S. 11° W. (S. 39° W. mag.) from the north entrance point of Rocky Cove. Stony Point Rock, with 10 feet water on it, lies 150 yards from the shore, at 200 yards N. 56° E. (N. 84° E. mag.) of Stony Point, a rugged projection sheltering the cove of the same name, situated $1\frac{1}{2}$ miles south of Rocky Cove.

Long Point, a narrow promontory 89 feet high, extends 250 yards from the coast at $1\frac{1}{2}$ miles south of Rocky Cove. Some rugged rocks lie north of the point, the lowest of which covers at high water, and shelter a small cove with a beach of shingle.

Patrick Island, 27 feet high and bare, is 1,300 yards SW. of Long Point; another small islet lies close east of it, and sunken rocks that break in ordinary weather extend east and south for a distance of 200 yards from Patrick Island. This island is the dividing point of two coves and the turning point of the entrance to Presque Harbor. In the northern of the coves is a rock that dries one foot at low water.

Presque Harbor, 5 miles long and 1,200 yards wide, has many dangers in the entrance, making an intricate passage, but when within there is a great depth of water over the most part of it. The passage between the inner dangers at the entrance is only 100 yards wide.

Western Rocks are two bare islets 13 and 12 feet high and 200 yards apart; there is no passage between them, but they are bold-to on the south side.

Big Island, 30 feet high, is a flat bare rock situated 800 yards NE. from Western Rocks. It is bold-to on the east and north sides, but from the SW. extreme a bank extends SSW. a little more than 400 yards, with $3\frac{1}{2}$ fathoms water at its western extremity.

Goat Island, on the northern side of the entrance to Presque, and separated by a clear channel 65 yards wide from the eastern shore, is covered with moss, and has a flat summit, surmounted by a small tuft, 108 feet above high water.

Little Goat Islands are two square islands and a small rock lying close SSW. of Goat Island, with shoal water extending a short distance in the same line to the southward. Westward of these islands is a cluster of rocks extending $\frac{1}{4}$ mile; the westernmost, on which the depth is 9 feet, is close west of a rock that dries at low water.

Harbor Rock, lying 550 yards southwestward of Little Goat Islands, is the western turning point into Presque; it is 11 feet high, small and flat, and has a sunken rock lying a few yards east of it.

Coppaleen Rock, 5 feet above high water, lies 600 yards SE. of Harbor Rock, and is connected by a reef to the mainland, from which it is nearly 200 yards distant; it may be approached to 100 yards on the south side.

St. Kyrans, 800 yards long and 250 yards broad, is entered from the west side of the head of the northern arm of Presque. Shoal ground extends a short distance from the eastern point of the entrance, but there is no other danger.

Ice.—During severe winters Presque Harbor occasionally freezes, but the ice being generally thin does not interfere with anchorage.

Northwest Cove.—Anchorage may be obtained here by a few small craft in 5 fathoms water, but the holding ground is bad.

Southwest Beach, at the head of the southern arm of Presque, has shoal water extending nearly 200 yards from the head, but anchorage may be obtained in from 15 to 17 fathoms water.

A small shoal, with 3 fathoms water on it, lies in the middle of the southern arm of Presque, and is the summit of a rocky bank, 200 yards long, within the depth of 10 fathoms.

Tides.—It is high water, full and change, in St. Kyrans, at 8h. 20m.; springs rise 7 feet; neap rise 5 feet.

Directions.—Strangers will find Presque Harbor difficult of approach, and, if under sail, should be prepared for the squalls that descend with great violence, from the hills and through the valleys in the neighborhood, when high winds prevail.

There are two passages; the better is that close east of Western Rocks; the other, to the eastward of Big Island, is not available in bad weather.

Having arrived off the entrance, with Goat Island well open north of Western Rocks, bearing about N. 5° W. (N. 23° E. mag.), the latter may be run for and passed at 100 yards. The two Western rocks must then be kept in line until Harbor Rock is open

north of Coppaleen Rock, when a course may be steered to pass 200 yards NE. of Coppaleen Rock and 100 yards NE. of Harbor Rock.

Anchorage.—Large vessels may obtain anchorage in 25 fathoms water off the conspicuous house at the head of the northern arm of Presque, and small vessels will find perfect shelter in St. Kyrans Harbor in from 7 to 11 fathoms water, over mud, with good holding ground.

Coast.—Tasse l'Argent (Tostello) is a shallow harbor, entered 600 yards SW. of Western Rocks; it is only available for small craft, and is at all times difficult of access, the winds being frequently baffling.

From Tasse l'Argent to Eastern Head, low rocks lie off many of the points, and shoals front the coast at $\frac{1}{2}$ mile distant.

White Sail, a conspicuous white patch in the cliffs, is $\frac{3}{4}$ mile SW. of Tasse l'Argent, and White Sail Head, a remarkable sharp peak 615 feet high, is $\frac{1}{2}$ mile SW. of it.

Eastern Head, $1\frac{1}{2}$ miles SW. of White Sail Head, is a narrow cliffy promontory, terminating in a peaked rock, off which shoal water extends nearly 200 yards.

Black Rock, 1,650 yards S. 9° W. (S. 37° W. mag.) from Eastern Head, is 23 feet above high water, small, bare, and bold-to. The Sunker, a rock with 6 feet water on it, lies 600 yards S. 68° W. (N. 84° W. mag.), and another, named Heptidge Rock, with 4 $\frac{1}{2}$ fathoms over it, lies $\frac{3}{4}$ mile S. 60° W. (S. 88° W. mag.) from Black Rock.

Gull Islands, a group of conical rocks, the highest of which is 156 feet above high water, lie $\frac{3}{4}$ mile southwestward of Eastern Head.

Great Bonah Cove is 1,100 yards deep and 400 yards wide; the settlement is situated round a small bight on the eastern shore.

Anchorage.—Temporary anchorage for small vessels may be obtained, with shelter in all winds but those from SE. to West off Great Bonah, in 11 fathoms, or by large vessels in from 11 to 13 fathoms water farther out.

Little Bonah Cove is nearly 2 miles southwestward of Great Bonah Cove. A rock, with 11 feet water on it, lies just within the entrance, 100 yards from the eastern shore; and another, with 13 feet water on it, is situated 100 yards from the same shore 300 yards within the entrance.

A few houses are built round a small shallow inlet on the west shore, where fishing boats find good shelter.

Little Paradise, a harbor 800 yards long, is entered through a channel 100 yards wide, at one mile SW. of Little Bonah. Shoal water extends a short distance from both sides of the entrance, and

only 5 fathoms can be carried through at low water, though the depth increases to 17 fathoms immediately the bar is crossed.

Anchorage.—The anchorage is in the northern of two coves, in a space 300 yards in diameter, with 9 fathoms water and good holding ground. A few families reside here.

Paradise Harbor, at $\frac{1}{2}$ mile SW. of Little Paradise, and fronted by Marticot Island, is shallow and obstructed by rocks, but is a good boat harbor, around which there is a considerable settlement.

Anchorage.—Anchorage may be obtained off the harbor in 11 fathoms water, with shelter from all but easterly winds.

Ice.—Paradise harbor occasionally freezes during severe winters, but anchorage can generally be obtained, as the ice is usually thin.

Merasheen Island is 19 miles long and 5 miles broad, near the SW. extreme. Gallivan Hill, the highest part, is 936 feet above high water. The southern hills are flat, and have long slopes, covered with moss, while to the northward rugged hills and wooded summits prevail.

Virgin Cove, $\frac{1}{2}$ mile eastward of Breakheart Point (the nearest part of Merasheen Island to Great Isle of Valen), has several houses on the east side and steep cliffs inshore, over which a conspicuous waterfall runs to the sea; the cove affords anchorage, with offshore winds, in 7 fathoms water, over sand.

Merry Harbor, nearly 6 miles northward of Virgin Cove, is 600 yards long, 300 yards wide, and contains excellent anchorage in 4 to 6 fathoms water. Two flat islets, 8 feet high and nearly joined together, lie close to the south entrance point, and two small islets lie close to the north entrance point. Vessels may enter between these two groups of islets, and anchor as convenient.

In autumnal gales, heavy squalls sweep over the harbor with SE. winds.

Water.—Water may be procured in abundance from a waterfall.

Ragged Islands are an almost innumerable group situated on the northwestern side of Merasheen Island. Only those in the outer channel, or near the first anchorage from the southward, have been surveyed. They extend $11\frac{1}{2}$ miles, and there is a clear passage between them and Merasheen Island, and several passages between the different islands of the group, but they are only known to the inhabitants, and none are available for large vessels without the assistance of a local pilot.

Numerous dangers lie off these islands, which should not be approached without great caution.

Black Rock, the westernmost, is 18 feet high, dark, bare, and flat. It is steep to on all sides but the east, from which a ledge extends a short distance.

Green Islands, next to the eastward, consist of two rocks, flat and grassy, the higher 41 feet above high water. A shoal extends a short distance from the western island.

A rock with 6 feet water is the outer of shoals extending 600 yards northward of Green Islands, and is 250 yards in extent east and west. A shoal with $3\frac{1}{2}$ fathoms water lies $\frac{1}{4}$ mile N. 23° E. (N. 51° E. mag.) from Black Rock, and a rock with 9 feet water bears S. 70° E. (S. 42° E. mag.), a little more than 400 yards from Green Islands, or about half-way between them and Sugarloaf Islet.

Sugarloaf Islet is 72 feet high, conical in shape, and 750 yards eastward of Green Islands. Some low rocks lie close off this island, but with this exception it is bold-to.

Tinker Rocks, two small granitic islets, 27 feet high, lie 600 yards eastward of Sugarloaf Islet. There is no danger off them on the north, south, and west sides. A rock, with 10 feet water, lies 300 yards N. 48° E. (N. 76° E. mag.), and another, with 12 feet water, 550 yards N. 82° E. (S. 70° E. mag.) from the eastern of the Tinker Rocks.

Crane Island is separated by a clear channel $\frac{1}{4}$ mile wide from Sugarloaf Islet. It is nearly $\frac{1}{4}$ mile long and 800 yards broad. The summit, 195 feet above high water, appears flat, with a slight fall to the southward, but on the island are several hills, with deep ravines between them, and it is nearly covered with small trees. The sides are principally of steep, dark cliff, but there is a landing place on the south side. A rock, with 9 feet water, lies 300 yards N. 79° W. (N. 51° W. mag.) from the west extreme of Crane Island.

Dock Islands are three wooded cones, occupying a space 800 yards in extent, and situated south of Crane Island, with deep water between. Some rocks lie off the north extreme, but they are steep-to. The highest of the Dock Islands is in the middle, and attains an elevation of 138 feet. A reef extends a short distance from the northern one.

Dock Island Sunker dries 3 feet at low water, and lies 400 yards S. 8° E. (S. 20° W. mag.) from the south extreme of the southern island. A rock, with 2 feet water on it, lies midway between the sunker and the east extreme of Dock Islands.

The passage between Dock and Crane Islands is clear in mid-channel.

Lockyer Rock, lying 600 yards N. 53° W. (N. 25° W. mag.) from the northernmost of Dock Islands, is gray, flat, and 3 feet above high water.

A rock, with 2 feet water on it, lies nearly 200 yards westward, and a shoal, with $5\frac{1}{2}$ fathoms water, lies 300 yards northward of Lockyer Rock.

Jean de Gaunt Island is the most remarkable of the southwestern portion of Ragged Islands, being surmounted by a conspicuous hill, with a sharp fall near the summit, and 388 feet above high water. This island is $1\frac{1}{2}$ miles long and 1,200 yards wide, and contains numerous hills, divided by deep valleys. The most remarkable, next to the summit, are a bluff hill, with a triangular rock at the top, 292 feet above high water, over the SW. extremity, and a sharp peaked hill, 282 feet high, near the north extreme. The shores are bold and cliffy, with a few small coves, to which the hills slope less steeply.

Jean de Gaunt Harbor is a small cove, nearly 200 yards deep, that affords shelter only for small craft, and is situated on the west shore of the island, 800 yards from the south extreme. A small islet, 8 feet above high water, lies close to the north extreme. Small craft enter by keeping the south shore of the harbor on board.

Jean de Gaunt Harbor Sunker, awash at low water, bears N. 70° W. (N. 42° W. mag.), distant 850 yards from the entrance, and a shoal, with $5\frac{1}{2}$ fathoms on it, lies 200 yards beyond.

Frank Head, a projection with two wooded mounds, 106 and 89 feet high, forms the north entrance point. When seen from this direction a dark, conical hill will be seen in the middle of the island, up a deep valley. Three shoals lie off this head, with 3 feet least water on them.

Anchorage.—The anchorage of Jean de Gaunt Island is at the north extreme, off a cove where are some white houses. The approach from the north is only possible for vessels of 10 feet or less draft, and then only with a local pilot, but there is a clear channel from the southward.

Directions.—Mid-channel should be kept between Merasheen Island to the eastward and Grey Gull Island to the westward. Jarvis Islands (the group next east of Grey Gull Island) should be approached within $\frac{1}{2}$ mile, and the vessel should then pass between Crève Islands on the north and Jarvis and Jean de Gaunt Islands on the south. Rounding the latter at 100 yards the anchor may be let go off the cove before described.

Large vessels should not proceed so far, but anchor between Crève Islands and the entrance to the cove, in from 14 to 16 fathoms water, over mud.

Tides.—It is high water, full and change, at Jean de Gaunt Island at 8h. 6m.; springs rise 7 feet; neaps rise 5 feet.

King Island, the largest of the Ragged Islands, is 5 miles long, and nearly divided in several places by deep coves from either side. North of King Island is a labyrinth of small islands and rocks. The eastern shore is unsurveyed.

Galton Island, nearly 600 yards north of Jean de Gaunt Island, has a square summit 76 feet high. A small creek on the south side, surrounded by houses, affords good shelter to fishing craft.

Brandies Shoal, a patch of dangerous rocks, occupying a space of 300 yards, lies $1\frac{1}{4}$ miles S. 84° W. (N. 68° W. mag.) from the NW. extreme of Jean de Gaunt Island. The two western dry 2 feet, the eastern has 2 feet on it at low water, and they generally break.

Forked Duck Rock, about 3 feet above high water, and so named from the forked appearance presented by the two small pinnacles that surmount it, lies 1,650 yards N. 51° W. (N. 23° W. mag.) from the SW. extreme of Galton Island. Western Sunker, with 4 feet water on it, lies 800 yards S. 73° W. (N. 79° W. mag.) from Forked Duck Rock. Both these rocks are small and steep-to.

Shag Island, 77 feet high, stands out prominently about half-way between Ragged and White Islands. Roost Rocks, 6 feet high, lie 100 yards from the west side of this island, and are continued a short distance by shoal water.

Shag Roost Sunkers, two of which dry at low water, lie about $\frac{1}{4}$ mile S. 45° W. (S. 73° W. mag.) from Shag Island.

Broad Cove, a good harbor for small craft, is entered about one mile eastward of Shag Island, and may be distinguished by Pond Head, a round, wooded mound, 125 feet high, west of the entrance, and Tacks Look-out, a bare-topped hill, 312 feet high, that falls almost perpendicularly to the east side of the cove.

The cove is 750 yards deep and 350 yards broad, but a shoal, on which the depth is 11 feet, lies close to the eastern shore, and the head is filled with rocks that dry at low water.

Tacks Beach, the head of a bay 600 yards in diameter, is only 50 yards wide between it and a cove on the south side of King Island. A settlement, with a schoolhouse, is built round a small bight north of the beach, and on the low projection separating them. Boats proceed to Buffet Harbor (Long Island) from Ragged Islands, by hauling over this beach, and over a similar one at Dog Harbor in Merasheen Island, whence they cross to Mussel Harbor, which is connected by road with Buffet Harbor.

Anchorage.—Anchorage can only be obtained here in moderate weather, and the holding ground is bad.

Tacks Head, north of the beach, is the most conspicuous headland in Ragged Islands; it rises to a sharp peak 420 feet high, and falls in steep bluffs to the shore.

Cooper Cove, a small boat harbor, lies at the south base of Tacks Head, a steep high hill separating it from Tacks Beach.

New Harbor Head, one mile north of Tacks Head, is a conspicuous square, wooded headland, 130 feet high, the summit of

an island forming the north shore of New Harbor. This harbor is a shallow inclosure available only for boats.

Green Island, $\frac{1}{2}$ mile northward of New Harbor Head, is wooded, and 100 feet high. Several small islets lie off both east and west extremes, and a rock, that dries 4 feet at low water, lies 300 yards N. 73° W. (N. 45° W. mag.) from the west extreme of this island.

Marshall Island, flat, wooded, and about 50 feet high, has a rock that dries 2 feet, lying 250 yards SE. from it.

North Tilt Island, surmounted by a tuft of trees 155 feet above high water, is one mile NE. of Marshall Island. It is difficult for a stranger to distinguish the other islands, the passages between being narrow. Holletts Islands are low and covered with small trees.

Baggs Island, 6 feet high, and bare, lies NE. of the passage between Merasheen and Ragged Islands; rocks extend nearly 200 yards from it, NNE.-SSW.

In the large bay NE. of this island, a narrow neck divides the bay from Great Brûlé Harbor. A conspicuous white house, surrounded by cultivated land, is built on the south side of the bay. A small wooded eminence, 66 feet high, stands on the narrow neck, on the summit of which there is a church.

St. Bernard, a small cove north of the bay, has also some houses built round the shore.

The north extreme of Merasheen Island terminates in a steep slope from a dark wooded hill, off which is situated Winging Rock, a small bare islet 6 feet high.

White Island, 108 feet high, lies 750 yards from the north extreme of Merasheen Island, but the navigable passage, narrowed to 400 yards in width by the shoals off Stickland Point, is available only for small vessels.

Duck Rocks are two small bare rocks, situated 1,800 yards N. 48° E. (N. 76° E. mag.) from the north extreme of White Island. The northern and higher is 4 feet above high water, close west of which lies a rock awash at low water. These rocks are the summit of a bank, extending from them 1,400 yards westward and 600 yards northward, within the depth of 10 fathoms, on which are numerous shoals.

Little Brûlé Harbor lies on the eastern side of the peninsula at the north extreme of Merasheen Island, and is formed by that shore and some islands to the southward; the largest, named Big Island, is 140 feet high and has several rocks and shoals extending from it in an easterly direction.

The harbor is 500 yards long, 300 yards wide, and may be entered from the northeastward, taking care to avoid the bank midway between Big Rock and Batts Island by keeping along the shore of Merasheen Island.

Anchorage.—Anchorage may be obtained in from 8 to 10 fathoms water, with good shelter from all but NE. winds.

Crabbe Cove, a small boat harbor 200 yards in diameter, lies immediately SW. of Little Brûlé Harbor, and is joined to it at high water.

Great Brûlé Harbor, east of the narrow neck at $1\frac{1}{2}$ miles from the north extreme of Merasheen Island, is 700 yards deep, 500 yards wide at the entrance, and affords anchorage in from 6 to 12 fathoms water.

Brûlé Shoal, on which the depth is 17 feet, is the least water on a bank lying 800 yards N. 79° E. (S. 73° E. mag.) from Brûlé Head, south of Great Brûlé Harbor.

The Castle, a small square rock 14 feet high, is $2\frac{1}{4}$ miles South (S. 28° W. mag.) of Big Island. Rocks that dry at low water extend about 200 yards SSE., and a shoal, with 12 feet water on it, lies 750 yards S. 87° W. (S. 65° W. mag.).

Butler Island, 183 feet high, and separated from Merasheen Island by a channel 200 yards wide, with 6 fathoms water in it, lies $1\frac{1}{4}$ miles westward of the Castle.

Anchorage.—Temporary anchorage for small vessels may be obtained off the cove west of Butler Island, in 16 fathoms water.

Little Butler Island, 80 feet high, is 800 yards southward of Butler Island, and 200 yards from the shore of Merasheen Island.

Dog Harbor, the entrance to which is 1,600 yards southward of Little Butler Island, is free from danger; it is 950 yards long, 400 yards broad, and affords anchorage in from 6 to 15 fathoms water, as convenient.

Just inside the east point is a narrow neck, 35 yards across, over which boats are hauled to the channel between Merasheen and Ragged islands.

Merchant Cove, on the south side of the isthmus joining Dog Harbor Head to Merasheen Island, has no room except for one or two small vessels, and is exposed to southward.

Rosiru Point projects to the eastward and forms a bight 600 yards deep, terminating in a narrow creek. Small vessels anchor off this bight, but the point should be rounded at 200 yards to avoid the rocks extending from it.

Rosiru Island, $1\frac{1}{4}$ miles southward of Rosiru Point, is $1\frac{1}{4}$ miles long and separated from Merasheen by a clear channel nearly 200 yards wide at the narrowest part.

Bird Islands compose a group lying $\frac{1}{2}$ mile from the eastern shore of Rosiru Island. Duck Rocks are two small bare islets; the higher, 6 feet above high water, is 600 yards from Bird Islands.

Rosiru Sunker dries 2 feet at low water, and bears about south 800 yards from the south extreme of Bird Islands. A ledge extends

250 yards northward from this danger, and a rock, with 16 feet water on it, lies 150 yards S. 62° W. (West mag.).

Indian Harbor, $\frac{1}{2}$ mile deep, is entered on either side of Southwest Island, which is 187 feet high, and lies in the middle of the entrance, the better passage being that east of the island.

Anchorage.—The head of the harbor, which is shallow, affords excellent anchorage for fishing craft, but the anchorage for vessels is very limited, as a shoal extends 140 yards from the south shore, just within Southwest Island, leaving a clear space only 200 yards in diameter.

Darby Harbor, an exposed cove, lies close southward of Indian Harbor.

Coast.—The coast extends in a southerly direction $5\frac{1}{2}$ miles from Indian Harbor to Redland, a remarkable slip in the cliffs of a more yellowish hue than the color of those in Red Island; this distinction should prevent mistakes in identification. Hogan Cove, $1\frac{1}{2}$ miles north of Redland, affords shelter for fishing boats from offshore winds.

Big Sunker, with 2 feet water on it, lies 900 yards southward of Redland.

Dirty Rocks, 33 feet high, lie 400 yards off the coast, near the SE. extreme of Merasheen Island. They consist of two prominent pinnacles, named respectively the Blue and Red Rocks from their colors, and several smaller rocks joined at low water.

A group, consisting of Allen, Charley, Hennessy, and Owen Rocks, having a least depth of 6 fathoms, lie $2\frac{1}{2}$ miles southward of Dirty Rocks, and are said to break in bad weather.

Little Shoal, with 8 feet water on it, lies $\frac{1}{4}$ miles S., 84° E. (S. 56° E. mag.), and Barrett Rock, with $4\frac{1}{2}$ fathoms over it, lies $1\frac{1}{2}$ miles S. 62° E. (S. 34° E. mag.) from Dirty Rock.

Coast.—Big Bald Head, a conical wooded mound 211 feet high, lies in the middle of the south side of Merasheen Island, and projects a short distance from the coast. A waterfall descends over the cliffs in the cove east of this head.

Scrape Cove Head, 419 feet high, is darker in color than the background, and Long Point, a flat islet 51 feet high, continues this head to the southward, and is terminated by Long Point Rock, small, conical, and 10 feet high, off which there is a shoal, with 6 feet water on it, distant 140 yards.

Merasheen Harbor, at the SW. extreme of Merasheen Island, is a good anchorage for small vessels, but the entrance is only 200 yards wide; during, and after, a SW. gale, a heavy sea prevents access till the swell subsides.

West Head forms the west entrance point of the harbor, from which sunken rocks extend 300 yards. Cross Point is the east entrance point.

Merasheen Harbor is divided into two parts by Soldier Point, a narrow promontory 31 feet high, but the whole is so encumbered by rocks and shoals that local knowledge is required to enable a stranger to enter for the first time, and the anchorage space is very limited.

Cross Point Shoal, with 16 feet water on it, lies 700 yards S., 70° W. (N. 82° W. mag.) from Long Point Rock; and Big Shoal, with $4\frac{1}{2}$ fathoms on it, lies 1,050 yards S. 58° W. (S. 86° W. mag.) from the same rock. The church seen in the entrance to the harbor, bearing about S. 87° E. (S. 59° E. mag.) leads north of these shoals.

A number of shoals, not dangerous in ordinary weather, lie to the southward and westward of those described above, but several of them break in bad weather and cause a confused sea in the approach to the harbor.

Pond Head Sunkers lie $\frac{1}{4}$ mile S. 63° W. (West mag.) from the north side of Pond Head, and nearly always show by breakers. The outer rock dries 2 feet at low water, and is bold to the westward.

Little Merasheen Harbor, east of Pond Head, and separated by a narrow isthmus from the head of Merasheen Harbor, is 400 yards deep; it is narrow, and shallow, so that only two or three small craft can lie there, and is quite exposed to NNE. A large settlement surrounds this and Merasheen Harbor.

Red Island is 2 miles from the SE. extreme of Merasheen Island. On the southern slope of the highest hill (880 feet) is a gray spot, that, when seen from the southward, appears like a small cloud or smoke. The Tolt, a sharp cone 723 feet high, has a white stripe extending from the summit nearly two-thirds down the north face.

Red Island Harbor, on the NE. coast of Red Island, is fronted by several extensive rocky shoals, and available for a few small craft only. It is 360 yards deep, and about 100 yards wide, with 8 feet water in it. A settlement surrounds the harbor.

Cochrane Cove, 200 yards deep, with a shingle beach at the head, is $\frac{1}{4}$ mile south of Red Island Harbor.

Southwest Cove, on the west shore, is fringed by a beach of shingle. Small fishing vessels find sheltered anchorage here with offshore winds, in from 6 to 9 fathoms water. Southwest Cove Head, south of this cove, is also known as Blue Point, from the apparent color of the land in ordinary weather. Long Point, in the middle of the west shore, is low and sloping, and shoal water extends nearly 200 yards from its extremity.

Goat Island, surmounted by a remarkable tree, 108 feet above high water, has no passage for a stranger between it and the NW. extreme of Red Island, from which it is distant 250 yards.

Goat Island Sunker dries 2 feet at low water, and is 800 yards West (N. 62° W. mag.) from the south end of Goat Island.

Little Seal Islands, 2 miles NE. of Goat Island, consist of a small group, occupying a space 700 yards long and 250 yards broad: the highest, situated at the east extreme, is 91 feet high, and covered with small trees.

Great Seal Island, $\frac{1}{2}$ mile NNE. of Little Seal Islands, is flat in outline, 346 feet high, and falls in steep cliffs to the southward, but slopes gradually to the northward. The shores should not be approached nearer than 200 yards.

Long Island, 13 miles long and $1\frac{1}{4}$ miles broad at the greatest width, contains two good harbors; Buffet Harbor on the SE. side, and Mussel Harbor on the west side of the island. Buffet Head, the south extreme, is a remarkable perpendicular cliff about 300 feet high, the extremity of a mass of high land, the summit of which is 599 feet above high water.

Iron Island, a bluff flat-topped island, 245 feet high, lies off this extreme, and is bold-to.

Ironskull Rock, lying $\frac{1}{2}$ mile SE. of Iron Island, is 14 feet high, and steep-to except on the SW. side, 100 yards off which is a reef that covers 2 feet at high water.

Dog Islands, about a mile NNE. of Buffet Head, are three wooded islets, the highest 135 feet high, separated by a channel 400 yards wide from Long Island. There is a passage between the western and two eastern islands in mid-channel, but none between the two eastern.

Tides Cove Sunker covers 4 feet, and is 550 yards S. 54° W. (S. 82° W. mag.) from the western Dog Island.

Buffet Harbor is on the SE. side of Long Island, 3 miles from the south extreme, and the entrance may be easily recognized by Buffet Island, a cone 151 feet high, $\frac{1}{2}$ mile east from the entrance.

A shoal, on which the depth is 4 fathoms, lies 450 yards S. 57° W. (S. 85° W. mag.) from the west point of this island; and Matthews Rock, that covers 5 feet, and does not always break, is 450 yards N. 6° E. (N. 34° E. mag.) from Buffet Island. Any part of Dog Islands seen open east of Buffet Island, bearing about S. 20° W. (S. 48° W. mag.) will lead east of this rock.

Dicks Island, 174 feet high, and Isaac Island, 108 feet high, are south of the entrance to the harbor, and are separated from Long Island by narrow channels, passable for boats only. On the shores of these channels is a settlement named the Tickles.

Within the entrance the harbor divides into three arms; the southern has shallow water stretching 100 yards from the shores, and Seal Rock awash at high water, close to the west point. The

harbor proper will be easily recognized by the church and prominent houses and wharves. There is no danger on entering, but a shoal extends 100 yards off a low point near the inner entrance on the east side, and may be avoided by keeping the whole of Buffet Island a little open south of the north point, bearing about N. 85° E. (S. 67° E. mag.)

Anchorage.—A large vessel should anchor immediately within the harbor in from 17 to 20 fathoms water, but small vessels may anchor in either of the arms as convenient.

Ice.—Buffet Harbor is partially or completely frozen over every second or third winter, from about the end of February or beginning of March to the beginning of April. Northern ice only visits the harbor every third or fourth year, and is uncertain both in the time of its arrival and departure; it seldom arrives before 1st March, and leaves between the end of March and early in May. In 1868 and 1882 drift ice remained unusually late, and in 1875 and 1882 the bay was completely frozen over, being the only winters that this had happened during 40 years.

Current.—The current generally sets to the SSW. past Buffet Harbor and in on the SE. shore.

Tides.—It is high water, full and change, in Buffet Harbor at 8h. 12m.; springs rise 7 feet; neaps rise 5 feet.

Little Harbor, $1\frac{1}{2}$ miles north of Buffet Harbor, is only available for small fishing craft, which may find good anchorage in 4 fathoms water, over mud.

Collett Cove, 2 miles northward from Little Harbor, affords fair anchorage in from 5 to 10 fathoms water, over sand.

Haystack Harbor, $6\frac{1}{2}$ miles northward of Buffet Harbor, is formed by a wedge-shaped peninsula 256 feet above high water, joined to the mainland by a shingle beach on which are some houses. There is good anchorage in 5 fathoms water, over mud, with shelter from all winds, and the inhabitants state that even in winter gales small vessels lie there securely. Both sides of the entrance to the harbor are clear a short distance from the shore.

Bread and Cheese Islands lie off Long Island Point, the north extreme of Long Island. Bread Island (the northern) is wooded and conical, 229 feet high, and a little more than one mile from Long Island Point; Cheese Island is 145 feet high. A shoal with 15 feet water over it lies 300 yards from the south extreme of Bread Island.

The Jerseyman, a bare rock, 14 feet high, is $\frac{1}{2}$ mile southward of Cheese Island, and 700 yards from Long Island Point.

Spencer Cove, on the NW. shore of Long Island, 2 miles south of Long Island Point, is nearly $\frac{1}{2}$ mile deep. Rocks, 4 feet above high water, lie just within the north point which extends ESE.,

200 yards, as a reef, a part of which is awash at low water. When entering, it is better to keep the south shore aboard to be sure of clearing these rocks.

Mussel Harbor, a fine basin on the west side of Long Island, $3\frac{1}{4}$ miles from the south extreme, is well sheltered throughout, and the holding ground good. It is $1\frac{1}{2}$ miles long and $\frac{1}{2}$ mile broad, has from 19 to 21 fathoms water, over mud, and is divided in two arms at the north end; in the western arm small vessels may anchor, but a short sea heaves into the other with SW. winds.

At the mouth of Mussel Harbor are three islands; the entrance is east of the southern of these islands, keeping in mid-channel to avoid a rock situated a few yards from the south shore. An islet is situated on the west side of the western arm, west of which are several shoals. The passage is to the east of this island.

North Wild Cove, $1\frac{1}{4}$ miles south of Mussel Harbor, affords no shelter.

Barren Island, 315 feet high, is separated from the entrance to Mussel Harbor, and the land south of it, by a clear deep channel 400 yards wide. Several shoals lie near the western coast, which should not be approached within $\frac{1}{2}$ mile. A small islet, 27 feet high, is situated close to the south point, 100 yards off which is a rock that nearly always breaks.

Merashcen and White Sail Banks are extensive banks lying southward of Merashcen Island, separated by a channel 2 miles wide from the shoals off that island.

Telegraph Rock, on which the depth is 11 feet, is the shoalest rock on these banks, and lies $8\frac{1}{2}$ miles S. 10° W. (S. 38° W. mag.) from Scrape Cove Head, and from it, shoals, with from 5 to 8 fathoms water on them, extend to Upper Big Shoal, with 8 fathoms water, one mile within the southern extreme of Merashcen Bank and 15 miles from Scrape Cove Head.

Bennett Bank, about 2 miles in extent ENE.-WSW., has $5\frac{1}{2}$ fathoms least water on Hollett Rock, a shoal which is 6 miles S. 13° E. (S. 15° W. mag.) from Scrape Cove Head.

On the northern portion of White Sail Bank are Northward Rock, with 7 fathoms; Joe Ground, $5\frac{1}{2}$ fathoms; and Jeans Rocks, 6 fathoms water, all lying on a general southwesterly bearing from Scrape Cove Head; Jeans Rock, the westernmost, being distant 6 miles. In addition to these there are several depths of 6 and 8 fathoms on the White Sail Bank.

Marticot Island, 4 miles westward of White Sail Head, on the north shore of Placentia Bay, is $1\frac{1}{2}$ miles long and nearly one mile wide, and consists of two high parts, joined by a low marshy isthmus. Marticot Back Cove, on the southern side of the isthmus, is 850 yards deep, with sides of steep cliff, and is quite exposed, with rocks off both entrance points for a short distance.

Close off the north extreme are some low rocks, with a shoal, over white bottom, lying a short distance off them. Marticot Cove, north of the isthmus, has a shingle beach at the head and is foul for a short distance from the shores, but anchorage may be obtained in 8 fathoms water, with shelter from southerly winds. Rocks extend a short distance from the east point, and a shoal, with 6 fathoms water over it, lies 400 yards N. 65° E. (S. 87° E. mag.) from them.

Gull Shoal, on which the depth is 13 feet, lies $\frac{1}{2}$ mile S. 5° E. (S. 23° W. mag.) from Gull Rocks, a cluster of cliffy islands off the south extreme of the island.

Fox Island is NNW. of Marticot Island, leaving a passage between 250 yards wide. A rock, with 12 feet water over it, lies off the SW. part of the entrance to this channel, 300 yards S. 43° W. (S. 71° W. mag.) from the SE. extreme of Fox Island.

A rock, that breaks in ordinary weather, lies 1,070 yards N. 55° W. (N. 27° W. mag.) from the SW. extreme of the island.

Coast.—From Paradise the coast trends NNW. $\frac{1}{2}$ mile to Red Cove, an indentation 800 yards deep and 400 yards wide, open and exposed. Red Cove Head, the west point, is skirted by rocks off reddish cliffs, and this shore is foul till Southeast Cove is reached.

Long Island, $1\frac{5}{8}$ miles west of Marticot Island, is 4 miles long, and $\frac{3}{4}$ mile wide at the broadest part near the SW. end, gradually narrowing to a sharp point at the NE. extreme. The shores are bold to a short distance off, and are surmounted by a series of peaks, the highest, a sharp cone 472 feet high, falling steeply to the north shore about a third of the length from the SW. extreme. Some low black rocks lie off the east side.

Long Island Bank lies nearly a mile SE. of Long Island. It is $1\frac{1}{2}$ miles long and $1\frac{1}{4}$ miles broad within the depth of 30 fathoms.

The shoalest parts are two places with 10 fathoms water, eastward 2 miles and $2\frac{3}{4}$ miles, respectively, from the SW. extreme of Long Island.

A shoal, with 8 fathoms water on it, lies $3\frac{1}{4}$ miles S. 40° E. (S. 12° E. mag.) from the SW. extreme of Long Island.

Paradise Sound is entered 2 miles NW. of Marticot Island, and extends 11 miles in a northeasterly direction; it is about $\frac{1}{2}$ mile wide, and has deep water generally. There is anchorage for small vessels in Southeast Cove, the first indentation on the SE. shore, where are a few houses, in Gilberts Cove, on the NW. shore, opposite the first island, and at the head. The only danger is a rock a short distance NE. of the first island and out of the direct course up the sound.

Shag Rocks, a group of peaked rocks, the highest 4 feet above high water, lie just west of the entrance to Paradise Sound. The

easternmost of the group covers at high water, and faces a deep cove. There is no passage between these rocks and the shore.

A Shoal, with 8 feet water, lies S. 25° E. (S. 3° W. mag.), 300 yards from the highest rock.

Petit Fort Harbor, next west of Paradise Sound, is entered through a passage 400 yards wide between Eastern Head, a sharp point on the east side, and White Point, low and shelving, with small rocks a short distance off. The harbor extends 1½ miles N. by E., with several coves, expanding to ¼ mile in breadth inside the entrance, and thence narrowing gradually to the head.

A shoal, with 12 feet water, lies immediately within the entrance, nearly in mid-channel, and is steep-to. Two wooded islets, about 20 feet high, lie close to the west shore, and nearly join each other and the mainland at low water. Petit Fort, a small cove on the west shore, is formed by a peninsula surmounted by a round wooded hill about 90 feet high. On the neck joining this peninsula to the mainland stands the church, a white, wooden building, off which, connected to the mainland at low water, lies a cliffy islet 20 feet high. A settlement surrounds this cove. Harrington Cove, next south of Petit Fort, has a few houses round the shores, and a small islet, 13 feet high, off the south point. Petit Fort Harbor is surrounded by high hills, those on the east shore being a series of sharp peaks, 375 to 272 feet high, with deep valleys between, and on the west shore a wooded, flat range 450 feet high, faced by cliffs, and falling almost perpendicularly to the water line.

Anchorage may be had as convenient after the shoal in the entrance is passed, in from 5 to 10 fathoms, mud. Small vessels should proceed north of the wooded islets, where they will find security from all winds. Wild Cove, immediately SW. of the entrance, is open and exposed.

Nonsuch Head, a steep bluff under a round wooded summit 253 feet high, is the dividing point between Petit Fort Harbor and Nonsuch. A detached rocky hummock, 30 feet high, lies on the south side, and off the west extreme of the head are some low square rocks, and a shoal with 9 feet water over it lies about 400 yards westward of the head. Two small open coves lie on the west side of this head.

Shag Islets, 16 feet high, lie close off the NW. extreme of Nonsuch Head. A rock that covers 6 feet lies 100 yards S. 14° W. (S. 42° W. mag.), and a ledge extends the same distance NNW. from them.

Nonsuch extends 1½ miles in a northeasterly direction from these islets, to the narrows between the south shore and the north Burnt Island, 140 yards wide. A shoal, with 5½ fathoms water, lies nearly

in the middle of the entrance, 750 yards N. 67° W. (N. 39° W. mag.) from Shag Islets, and a rock, on which there is 6 feet water, lies in mid-channel, 1,100 yards N. 35° W. (N. 7° W. mag.), from Shag Islets; a shoal, with 15 feet water, lies 650 yards S. 31° W. (S. 59° W. mag.) from Gooseberry Island.

Gooseberry Island, 53 feet high, a small clifty mound, forms a good mark of recognition for Nonsuch Narrows. A cove, 1,400 yards deep and 700 yards wide at the entrance, narrowing gradually to the head, extends NE. from Gooseberry Island, and affords good anchorage in 9 to 6½ fathoms, sand and mud, with shelter from all winds but those from SW. to South.

Burnt Islands form the west side of the entrance to Nonsuch and the east side of Southwest Nonsuch. They are both nearly joined to each other and the mainland of Cape Roger, and are 1½ miles long. The southern island is surmounted by a barren cone, cleft in two. The higher part, 285 feet above high water, is continued to the southward by wooded hills. The east shore is foul for 200 yards. An inlet, 600 yards deep and 100 yards wide, is entered on the south side of this island, and affords shelter for fishing boats, but is barred at a short distance from the entrance by a shoal, with 4 feet on it at low water. A few houses are built on the shores of this inlet.

The northern island is barren, 165 feet high, and has a small, nearly detached mound on the east side, off which rocks that cover 5 feet extend 100 yards into the narrow entrance of Nonsuch, leaving a channel only 100 yards wide, through which 8½ fathoms can be carried by keeping the east shore close on board.

Tides.—It is high water, full and change, at Burnt Islands at 7h. 48m.; springs rise 7 feet.

Northeast Nonsuch extends from the narrows 2½ miles NNE., with an average breadth of 400 yards, expanding in a cove on the west shore about a mile within the entrance, off which anchorage may be had in 7 fathoms for vessels of moderate length. Small vessels may anchor as convenient till within ½ mile of the head.

Water may be procured from several streams in this harbor, and small firewood from the valleys.

Southwest Nonsuch extends 2 miles SSW. from the northern Burnt Island, and is unfit for vessels drawing more than 12 feet water; it may be entered by keeping mid-channel between Burnt Islands and the mainland. South of the narrows a fine basin opens out, ½ mile long and ¼ mile wide, with perfect shelter in 11 to 12 fathoms, mud. Two islands lie in this basin, and the head narrows to a shallow creek 600 yards deep.

Mouse Island, 17 feet high, is a small, grassy rock, 150 yards from the south extreme of Burnt Islands, with a reef extending

200 yards from the south extreme. A rock that covers 4 feet lies N. 79° E. (S. 73° E. mag.) 150 yards, and a shoal with 7 feet water S. 85° E. (S. 37° E. mag.) the same distance from Mouse Island.

Anchorage for small vessels may be had in 6 fathoms NW. of Mouse Island, but they must pass over a bar with 3½ fathoms water between that island and the mainland.

Woody Island, about 700 yards in length and the same in breadth, lies ¼ mile south of Burnt Islands, and is separated from the mainland by a deep, clear channel 300 yards wide. It is surmounted by three wooded hummocks; the highest, over the south side, being 228 feet high, slopes steeply to the water line, and may be approached to within 100 yards.

Hay Island, about 800 yards long, and narrow, is surmounted by a wooded cone 100 feet high, and is joined to the mainland by shoal water. A low, black rock lies close off the SW. extreme, and another SE. of the NE. end, but the east shore is bold-to.

Cape Roger is a steep cliff about 150 feet high, with a low, black rock close to the foot, the termination of a remarkable moss-covered headland 500 feet high, situated NW. of Hay Island and falling almost in a perpendicular line to the sea. The east coast of this cape may be approached close-to, but the west shore has shoal water a short distance from it.

Cape Roger Island, 800 yards long, lies 1,750 yards westward of Cape Roger and is wooded with dark trees, the summit, 220 feet high, falling in steep, black cliffs to the southwest extreme. Shingle beaches fringe the NE. shore and several rocks lie off the north and west shores 200 yards distant.

A Rock with 7 feet water lies 450 yards N. 67° E. (S. 85° E. mag.), and another head of the same bank, with 12 feet water, lies 600 yards N. 62° E. (East mag.) from the rock at the SE. point of Cape Roger Island. A rock with 8 feet water lies 300 yards S. 39° E. (S. 11° E. mag.) from the south point of Cape Roger Island.

Cape Roger Bay extends in nearly a straight line 4 miles N. by E. from Cape Roger, and is nearly a mile wide at the entrance, narrowing to 600 yards at a mile within, and to 350 yards at a short distance farther, keeping that breadth to near the head. A cluster of islets lies just within the entrance, 250 yards from the east shore, the southern, a pinnacle 10 feet high, and the northern, flat, 6 feet above high water. Sunken rocks lie 200 yards off these islets, and the channel between them and the main should not be taken.

Cape Roger Mountain, a conspicuous round hill, lies 9½ miles inland from Cape Roger, is 1,220 feet high, and shows prominently over the intervening land from the banks in Placentia Bay.

Cape Roger Harbor, situated on the west shore 1½ miles within the entrance, is sheltered by Harbor Island, wooded, 113 feet high

and 400 yards long, separated at the south end from the mainland by a narrow channel, through which 4 feet can be carried at low water. This harbor affords anchorage for small craft only, between the island and the mainland, in 2 fathoms, sand, but large vessels may find anchorage anywhere in the bay after the island is passed, in from 4 to 10 fathoms, mud, as convenient. Rocks extend off the point next south of Harbor Island, in a line crossing the bay, and that part of the west shore should not be approached nearer than 200 yards, but the island may be closed to within 100 yards from the east point. Rocks that cover lie in the harbor close SW. of Harbor Island. A conspicuous round hill 470 feet high lies on the east shore, separated by a marsh from the hills of Cape Roger, and shows out well from south.

Cape Roger Head, marking the west side of the entrance, is 498 feet high, and falls steeply to the bay, but in wooded slopes to the northwestward, and in a succession of wooded hills to the SW. point of the bay, a rugged, cliffy point under a wooded hillock, off which rocks that cover extend 200 yards.

A swell rolls across the entrance of Cape Roger Bay even when it is calm outside, especially after a prevalence of southerly winds.

Water may be procured in many places, and small wood is abundant in the valleys off this bay.

Little Gallows Harbor extends north from the west point of Cape Roger Bay nearly a mile, to a shingle spit, within which it branches off east and west, forming a basin 700 yards long and 150 yards wide. The harbor is 700 yards wide at the entrance, narrowing to 200 yards off a peaked rock on the west shore 1,200 yards within, and thence gradually to the shingle spit. Shoal water extends a short distance from both shores, and across the head, just outside the shingle spit, is a bar with 4 feet water on it.

Anchorage for small vessels may be had in from 5 to 8 fathoms, as convenient, with shelter from all winds but those from southwestward, the water shoaling suddenly from 17 to 8 fathoms off the first low neck on the west shore, and from there gradually to the bar. A few houses are built round the head.

Gallows Harbor Head separates Little and Great Gallows Harbors, and is disconnected from the mainland at high water by Pushthrough, a passage just wide enough for a boat. This head, surmounted by mossy hills 320 feet high, falls in sharp cliffs to southward, but in wooded slopes to the northward, the two northern hills being connected to each other and the highest part by two low necks of land covered with grass.

Great Gallows or Saint Joseph Harbor is entered between a low point surrounded by bowlders, close off which is a black rock that covers at high water, and Sams Head on the west side, a narrow point sloping from a steep bluff.

A bank, with 7 feet least water, lies S. 59° W. (S. 87° W. mag.) 500 yards from Sams Head. The harbor is 500 yards in diameter, and affords good anchorage in 7½ fathoms, mud. A few houses line the shores.

Gallows Harbor Island, about ¼ mile long, lies ¼ mile westward of the head of that name, and has a wooded summit 257 feet high. The water is deep to within a short distance of the shores.

Jigging Cove, entered 600 yards north of Sams Head, extends 600 yards in a northerly direction. The entrance is 200 yards wide, and the cove expands within to 300 yards in breadth. A rock with 7 feet water lies a short distance from the west point of the entrance. Small craft find good shelter in 5 fathoms, mud.

Mouse Island, 35 feet high, and covered with grass over black rock, lies between Gallows Harbor Island and the mainland north of it, leaving a clear passage 400 yards wide between the islands, but none between it and the mainland; low rocks continue the island to the northward.

Steering Rocks, 14 feet high, lie close to the shore off a slight indentation north of Mouse Island. A rock with 5 feet water lies S. 87° E. (S. 59° E. mag.) 300 yards from the highest of the Steering Rocks.

Little Harbor, 1½ miles westward of Great Gallows Harbor, extends north 1,200 yards, is generally 200 yards wide, but is narrowed at a short distance within the entrance by a rock off a shingle point. Fishing craft find shelter here in 1½ fathoms, off a small settlement. The west point is a group of low islets, the westernmost 13 feet high and steep-to.

Burnt Island, ¼ mile west of Little Harbor, lies close off the mainland, and shelters a small cove frequented by fishing boats. The coast between Little Harbor and this cove is rugged and much indented. A shoal lies just east of the island, a short distance from the mainland, but the island is bold-to on the south and west sides.

Holloway Passage, between Burnt and Cross Islands, is 500 yards wide, clear of danger, and deep.

Bale de l'Eau Head, immediately north of Burnt Island, slopes steeply from an isolated hill 227 feet high, covered with moss, and is bold-to.

Bale de l'Eau extends NNE., with a slight bend, nearly 4 miles, and has a nearly uniform breadth of 900 yards; the shores slope steeply from wooded hills 350 to 550 feet high. The water is deep, and there is no danger for 2 miles from the entrance, when the water shoals suddenly from 18 to 7½ fathoms in mid-channel. A depth of 6 to 7 fathoms continues for ¼ mile, when the water shoals quickly to 3 fathoms at a distance of 1½ miles from the head, and 800 yards within this dries at low water. Anchorage may be taken up on the plateau in 6 or 7 fathoms, mud, with perfect shelter.

Water and wood can be procured readily from many places on the shores of this bay.

Cross Island, $2\frac{1}{4}$ miles long, NE.-SW., and $1\frac{1}{4}$ miles broad, is surmounted by two conspicuous hills, covered with moss. The highest and northern has a small, flat summit 593 feet high, and the southern is a sharp peak 550 feet above high water. Lower, rugged, and wooded hills, with deep valleys between, extend to the shores, sloping steeply to the water line. Rocks that cover lie off the SE. shore that should not be approached nearer than 200 yards, and shoal water extends a short distance from the points on the NW. side. A shoal, with 6 fathoms water, lies $\frac{1}{2}$ mile S. 14° W. (S. 42° W. mag.) from the SW. point, and a rock, with 5 fathoms water, lies 200 yards off the NW. shore, opposite the channel between Petticoat and Gull Islands.

Gooseberry Island, 34 feet high, the north extreme of a chain of islands west of Cross Island, is a small, cliffy islet with shoal water extending a short distance to the northeastward, and a rock, with 5 feet water, 150 yards S. 25° W. (S. 53° W. mag.) from it, the extreme of a ledge stretching in that direction.

Petticoat Island is separated from the south extreme of Gooseberry Island by a passage 400 yards wide, clear in mid-channel. It is wooded over three round summits, the highest 182 feet above high water. A rock, with 7 feet water, lies 200 yards off a cove at the NE. extreme, and shoal water extends a short distance off the north shore.

Gull Island is 450 yards SSW. of Petticoat Island, and the channel between is clear of danger. The highest part, a wooded cone 210 feet above high water, lies near the NE. extreme, the SE. shore has dark cliffs and is steep-to, and the NW. shore consists of shingle beaches at the base of gentle slopes.

Little Gull Island, a grass-covered rock 30 feet high, is nearly joined to the SW. extreme of Gull Island.

Jerseyman Island, 257 feet high, is flat in outline and wooded, falling steeply to the shore, and terminated to the northward by a small islet 7 feet above high water. A rock, on which there is 6 feet water, lies 200 yards South (S. 28° W. mag.) from the south extreme. The passage between Jerseyman Island and the mainland is clear, the distance to Broad Cove Head being one mile.

Boat Harbor Head, dividing Baie de l'Eau from Boat Harbor, falls in steep bluffs from a moss-covered tableland 400 feet high, and is fringed on the west side by shingle beaches.

The Friar, a peaked rock, 11 feet high, lies close off the extreme of this head and is steep-to.

Boat Harbor extends $3\frac{1}{4}$ miles N. by E. from Boat Harbor Head, with a nearly uniform breadth of $\frac{1}{4}$ mile, and divides at the head

into Northeast and Northwest Arms, the former 900 yards deep, containing anchorage for small vessels, but shoals 600 yards from the head.

Northwest Arm is 1,400 yards deep and 500 yards wide, affording anchorage in 18 fathoms, but is shoal 400 yards from the head.

Parker Cove, just inside the entrance on the west shore, is 600 yards deep. A rock, that covers 5 feet, lies in the middle of the cove 250 yards from the shore, and a shoal, with 9 feet water, lies in the line of the points 950 yards from Manny Point south of the entrance.

Anchorage for ships can be had only in Northwest Arm, and for fishing craft in Northeast Arm and Parker Cove, inside the rocks.

Water may be obtained from several streamlets on the sides of this bay.

A Shoal, with 9 fathoms water, lies $\frac{1}{2}$ mile S. 67° W. (N. 85° W. mag.) from Boat Harbor Head. It is the summit of a bank, with less than 20 fathoms water, nearly $\frac{1}{2}$ mile in extent.

The Coast from Boat Harbor trends SW. by S. $2\frac{1}{2}$ miles to Bane Harbor; is backed by wooded ranges with several sharp barren peaks 470 to 616 feet high, and is bold-to. Bane Harbor Tolt, the southern of these hills, is sharp and 585 feet high.

Bane Harbor, a landlocked basin 700 yards long and 500 yards broad, is entered through a curved channel 100 yards wide, narrowed to half that breadth by rocks extending from the north shore. The entrance is well defined by white houses, and the church—a white wooden building on a small eminence just within the entrance on the north shore. Rodway Point, east of the entrance, is a low wooded mound, east of which is a rocky islet about 10 feet above high water. A rock lies close off the islet, and a reef that covers, with a shoal at the extreme, extends nearly 100 yards from Rodway Point. The northern side of the harbor slopes from wooded hills, and over the west point is an isolated hill 130 feet high, covered with small wood. The point under the church is rugged, and continued under water to the opposite shore, forming a bar, over which only $3\frac{1}{2}$ fathoms can be carried. Smith Point, south of the entrance, is steep-to, but a rock, awash at low water, lies a few yards from the point next within. Inside the entrance the harbor divides into Northeast Cove and the Bottom, the former extending 300 yards, and the latter a continuation of the main basin.

No vessel should go into this harbor for the first time without a pilot.

Steering Rock, 7 feet high, lies south 350 yards from the entrance to Bane Harbor. A low black rock lies off the SW. extreme, and a rock, with 2 feet water, 50 yards N. 25° E. (N. 53° E. mag.) from the east extreme.

Miller Point, 1,150 yards S. by W. of Bane Harbor, is a low projection from a high range, and is bold-to.

Rushoon Head is the end of a range of cliffs 1,700 yards SW. of Miller Point, falling from a high barren tableland surmounted by a boulder 330 feet above high water. Low boulders extend a short distance from the head with deep water close-to.

Rushoon Harbor, entered north of Nipper Head, a dark wooded hill, 112 feet high, situated 1,100 yards NW. of Rushoon Head, is a shallow harbor affording good shelter for fishing craft in $2\frac{1}{2}$ to 5 fathoms; it dries 200 yards from the fresh-water brook at the head.

Jigging Cove, between Rushoon and Nipper Heads, is faced by a shingle beach on which are several houses, and is steep-to.

A Rock, that covers 3 feet at high water, with a shoal stretching a short distance SW., lies 650 yards N. 65° W. (N. 37° W. mag.) from Rushoon Head, and a rock with 6 feet water lies 140 yards from Nipper Head.

Anchorage.—Vessels may anchor on a flat outside Rushoon in $7\frac{1}{2}$ fathoms, mud, by keeping the east point of the entrance to the brook at the head open of Nipper Head to clear the rock that covers, or inside that rock, close off the beach at Jigging Cove, by having the NE. end of Jerseyman Island well shut in with Rushoon Head.

Rushoon Bank, with 9 fathoms water, lies 600 yards S. 25° W. (S. 53° W. mag.) of Rushoon Head.

The Coast between Rushoon and East Broad Cove slopes steeply from wooded hills and may be approached to within 100 yards. Gull Rock, near the entrance of the cove and close to the shore, is 10 feet above high water and shows white against the dark background.

Broad Cove Head, a peninsula nearly a mile long, $\frac{1}{2}$ mile wide, and 337 feet high, is separated from the mainland by a narrow marshy isthmus about 60 feet above high water.

East Broad Cove affords good anchorage in 7 to 12 fathoms, mud and sand, the holding ground being better nearer the west shore. Several houses are situated on the shingle beach at the head. A plateau of shoal water extends north of this cove, falling suddenly to deep water on the SE. The general depth on this plateau is $7\frac{1}{2}$ fathoms, and the line of 10 fathoms joins Broad Cove Head and the north point of the entrance to Rushoon. A shoal, with 5 fathoms water, lies $\frac{3}{4}$ mile S. 57° E. (S. 29° E. mag.), from the SE. extreme of Broad Cove Head.

West Broad Cove also affords good anchorage in 10 fathoms, but is completely exposed to southerly winds. The holding ground is said to be better there than in East Broad Cove.

Green Island, 90 feet high, is the northeastern of a group lying off Broad Cove Head. It is small, covered with grass, and faced by dark cliffs. A reef extends 250 yards from the NE. end and 200 yards from the SW. extreme. A rock, with 6 feet water, lies 800 yards N. 76° E. (S. 76° E. mag.) from the east extreme of Green Island, the outer edge of a bank extending from the island.

Emberly Island, $1\frac{1}{4}$ miles SW. of Green Island, is surmounted by a peak, with a small flat top, 330 feet above high water, that shows prominently from all directions. The sides are steep, in many places formed of dark cliff, except the SW. extreme, that is terminated by a grassy mound 70 feet high. A white islet, 10 feet high, lies off the north point, and a sunken rock close off the point just south of it. Two small rocks lie off the east shore, and the south side is fringed by rugged rocks that cover and extend 200 yards from the shore.

Puddock Bank, with 6 fathoms water at the east extreme, extends nearly $\frac{1}{2}$ mile from Mainyard Point, the east extreme of Emberly Island. Simonds Rock, with $7\frac{1}{2}$ fathoms on it, lies $\frac{1}{2}$ mile S. 76° E. (S. 48° E. mag.), and Soundbone Rock, with 6 fathoms water over it, is 1,600 yards N. 73° E. (S. 79° E. mag.) from the same point. Upper Rock, with 10 fathoms water, is 1,150 yards N. 48° E. (N. 76° E. mag.), and Lower Rock, with 12 fathoms, is 1,500 yards N. 45° E. (N. 73° E. mag.) from Mainyard Point.

Fords Rock, awash at high water and steep-to, lies 270 yards S. 56° E. (S. 28° E. mag.) from some black peaked rocks, off the east point of Emberly Island.

The Washball, a rock that covers 4 feet at high water and is steep-to, lies $\frac{1}{2}$ mile N. 82° W. (N. 54° W. mag.) from the white islet off Emberly Island.

Andrews Island, 38 feet high, is the largest of a group of square rocks, joined at low water to the SW. point of Emberly Island. Rocks that cover lie a short distance off the northernmost of the group.

Oderin Island is separated from the SW. point of Emberly Island and the above group by a channel 200 yards wide, through which a depth of 9 feet can be carried at low water. A rock that covers lies off the west point of the channel, and another nearly 100 yards from a large boulder at the foot of the cliff on the south side of the passage. No vessel should attempt this channel without a pilot.

Castle Island, 36 feet high and covered with grass, lies off the west point of this passage, with shoal water between. The Beach, of shingle, is just south of this point and is backed by a row of houses.

Oderin Harbor is entered from the west side of the island and nearly divides it. **Chimney Rocks**, the shoalest, with one foot on them at low water, lie outside the harbor, nearly in the middle of the approach.

Spurrier Point, north of the entrance, is a grassy peninsula 20 feet high, from which the harbor extends 1,400 yards eastward, and then, with a sharp bend, 400 yards NE. by N. The north shore is clifty, and the south slopes from wooded hills, the highest of which, 255 feet above high water, has a flat summit, with a steep fall to the westward. The **Breadbox**, a small rock that covers, lies close to the west extreme of Spurrier Point. The Episcopal church, with a square tower, stands on the north shore, and the Roman Catholic church, with a spire, is situated on the dividing point of the bends of the harbor. A considerable settlement is built round the shores. Two small islands are situated 400 yards within Spurrier Point, and are steep to nearly on the east and south sides. A rock that covers at high water lies 200 yards S. 37° E. (S. 9° E. mag.) from the inner of the two islands, and is nearly connected to the south shore by rocks above and below water.

The **Breeches** is a shoal rock, with two heads close together, lying 250 yards N. 87° W. (N. 59° W. mag.) from the point on which the Roman Catholic church stands, and nearly in the fairway of the approach to the inner part of the harbor. The water is shoal between the Breeches and the south shore of the harbor, but a safe passage may be obtained by keeping the north shore on board.

The south shore of Oderin Island is composed of steep cliffs and is foul for 200 yards distant. **Lance Cove Head**, the east extreme of that shore, is a flat-topped bluff, 215 feet high, that also overlooks the harbor. Rocks extend 200 yards from both bills of this head.

Anchorage may be had in 7 fathoms in Ship Cove, just east of the islands, or inside the rock that covers. Small vessels will find perfect shelter at the head in 3 to 4 fathoms.

Tides.—It is high water, full and change, in Oderin Harbor at 8h. 6m.; neaps rise 5 feet.

Directions.—To enter Oderin Harbor: Shut in the Episcopal Church with Spurrier Point, and pass that point at 50 yards distant and the same distance south of the islands.

Lance Cove, an open bay north of the head, has shingle beaches separated by spurs of red cliff. A rock awash at low water lies just off the south point of the cove.

White Rock, with 6 fathoms of water on it, is the shoalest part of a bank extending nearly $\frac{1}{2}$ mile from Lance Cove Head.

Patrick Island, 110 feet high, lies close to the SW. point of Oderin Island, and is wedge-shaped, with dark cliffs to the southward and grassy slopes to the northward.

Crow Island, 201 feet high, is wooded and conical, with dark cliffs lying close to the west side of Patrick Island. Patrick Rocks, 13 feet high, are a ledge of black rocks extending SW. by S. 350 yards from Crow Island.

Fox Island, with a wooded summit about 100 feet high and reddish cliffs, lies NW. of Crow Island, and is steep to on the north side. There is no passage for vessels between these islands.

Jude Island, separated from the south side of Oderin Island by a clear channel nearly $\frac{1}{2}$ mile wide, is $2\frac{1}{2}$ miles long and 2 miles wide at the north extremity, narrowing irregularly to a sharp point at the south extreme. The channel between Oderin and Jude Islands should be taken by vessels wishing to pass inside, as the shores may be approached to within a short distance.

The north shore of Jude Island is of bold cliff, with some curious red stripes near the east end. Gull Island, a gray rock 48 feet high, marks that extreme, and is bold-to. The east shore is also nearly bold-to, consisting of steep cliffs round Eastern Cove, a curve in the coast line filled with islets and rocks fronting shingle beaches.

Cape Jude, a remarkable headland, lies near the south end of this shore, and is a round-topped hill, 411 feet high, falling in nearly a perpendicular cliff to the coast. A sharp hill, surmounted by a boulder 400 feet above high water, is situated just south of it.

A rock, with 4 feet water, lies 750 yards S. 14° E. (S. 14° W. mag.) from the south point. Hay Cove, 1,400 yards wide and 600 yards deep, lies NW. of the south point and affords anchorage with shelter from easterly winds in 9 to 10 fathoms, sand. At the bottom of this cove is a dark cliffy head with a shingle beach on each side. A rock, that covers 2 feet, lies off Green Point, a low projection north of the cove, and a rock with 8 feet water 550 yards N. 64° W. (N. 36° W. mag.) from the same point.

Jude Harbor, on the west side of the island, is entered north of Round Head, a hillock 120 feet high, that makes as an island. Anchorage, affording shelter with winds from south round by east to north, may be had in 12 to 10 fathoms, sand and mud, but a heavy swell rolls in with westerly winds. Rocks that cover, extend 200 yards SW. by W. from Poplars Head, north of the entrance.

Duck Rocks, that cover at high water, are two reefs bold-to on the west side, lying in a line parallel to the shore north of the harbor and $\frac{1}{2}$ mile distant. An islet, 8 feet above high water, marks the NW. extreme of Jude Island. A rock with 10 feet water lies 400 yards S. 67° W. (N. 85° W. mag.) from this islet.

Middle Island is the northernmost of a chain of islets lying SE. of Jude Island, and is $1\frac{1}{10}$ miles N. 78° E. (S. 74° E. mag.) from the south point of that island. It is conical, 80 feet high, and bold-to on the west and north sides. A rock, with 10 feet water, lies 200 yards from the south side.

Binghams Shoal, with 6 fathoms water, lies $\frac{1}{10}$ mile N. 79° E. (S. 73° E. mag.) from Middle Island.

Spicer Rock, with 9 fathoms water over it, lies $3\frac{1}{10}$ miles N. 87° E. (S. 65° E. mag.) from Middle Island.

Harbor Rocks, about 10 feet high, $\frac{1}{2}$ mile S. 25° W. (S. 53° W. mag.) from Middle Island, are a group having deep water a short distance from all sides but east, in which direction, at 200 yards distant, is a rock that covers 2 feet at high water. There is a good channel between Middle Island and Harbor Rocks.

Badger Rock, with $3\frac{1}{2}$ fathoms, lies $\frac{1}{2}$ mile S. 51° E. (S. 23° E. mag.) from Harbor Rocks, and breaks in bad weather.

Old Poe Shoal, with 6 fathoms least water, lies nearly $1\frac{1}{2}$ miles N. 82° E. (S. 70° E. mag.), and Point Shoal, with 7 fathoms least water, $1\frac{1}{2}$ miles S. 76° E. (S. 48° E. mag.) from Harbor Rocks. Both these are said to break in bad weather.

Pinnacle Island, about 30 feet high, lies $\frac{1}{2}$ mile S. 30° W. (S. 58° W. mag.) from Harbor Rocks, with a clear passage between them. Little Pinnacle, about 10 feet high, and Long Rock, about 50 feet high, lie close in a line S. 25° W. (S. 53° W. mag.) from Pinnacle Island, with no passage between for a vessel.

Saddleback, a castellated black islet 104 feet high, with grass at the summit, is the most conspicuous of the group, and is bold-to. The passage between it and Long Rock is 400 yards wide, and clear in mid-channel.

Little Saddleback, about 20 feet high, is a black islet SE. by E. 600 yards from Saddleback, and has deep water close eastward. A bank, with $4\frac{1}{2}$ fathoms least water, extends 600 yards S. by W. from Little Saddleback and breaks in bad weather.

Oderin Bank is a large shoal with depths varying from $5\frac{1}{2}$ to 27 fathoms. The western shoal, with 6 fathoms water, lies S. 39° E. (S. 11° E. mag.) $4\frac{1}{2}$ miles from Saddleback. From this shoal the bank trends $4\frac{1}{2}$ miles NE. to a shoal with $5\frac{1}{2}$ fathoms water, the intervening space being very irregular.

Big Shoal extends 3 miles to the southwestward of Oderin Bank, being separated by a gully $\frac{1}{2}$ mile wide with 50 fathoms water in it. The northeastern patch, with 10 fathoms, lies $4\frac{1}{2}$ miles S. 17° E. (S. 11° W. mag.) from Saddleback, and from it shoals with 7 to 8 fathoms extend irregularly to the southwestern head with 8 fathoms, which is 6 miles S. 5° W. (S. 33° W. mag.) from Saddleback. From Big Shoal a chain of banks extends to Mortier Bank.

John-the-bay Bank lies $\frac{1}{2}$ mile southward of Big Shoal, the water between deepening to 45 fathoms. It is $\frac{3}{4}$ mile in extent between the depths of 30 fathoms. Southwest Rock, with 8 fathoms water, is the shoalest part of this bank.

Osmond, Dicks, and Joe Rocks are three heads of a bank, with least water of 12 fathoms, Joe Rock, the westernmost, being nearly $2\frac{1}{2}$ miles South (S. 28° W. mag.) from Saddleback.

Jim Drake Ledge, with 7 fathoms water, lies one mile S. 20° W. (S. 48° W. mag.) from Saddleback.

Western Rocks, the highest of which is 20 feet above high water, are a group of square dark islets $1\frac{1}{2}$ miles westward from Saddleback. A rock, awash at low water, lies nearly 300 yards from the NE. extreme, and a rock, with 3 feet of water, a short distance west of the south extreme.

The Washing-tub, an islet 5 feet above high water, lies $1\frac{1}{2}$ miles S. 68° W. (N. 84° W. mag.) from Western Rocks. It is surrounded by reefs, and is nearly connected to Western Rocks by a line of shoals that break in ordinary weather, leaving scarcely room for a boat to pass between.

South Sunker, with 2 feet water, lies $1\frac{1}{2}$ miles S. 25° E. (S. 3° W. mag.) from Western Rocks and has deep water close to the eastward. Harry Ledge, with 5 fathoms water, lies in the same direction $1\frac{1}{2}$ miles from Western Rocks.

Smith Shoal, a bank 600 yards long, with depths varying from $3\frac{1}{2}$ to 5 fathoms water, is $1\frac{1}{2}$ miles S. 8° W. (S. 36° W. mag.) from Western Rocks.

Kelpy Sunker, with 9 feet water, lies $1\frac{1}{2}$ miles S. 25° E. (S. 3° W. mag.) from the Washing-tub, with a shoal of 3 fathoms 200 yards eastward of it.

Little Washing-tub, covering 4 feet at high water, is a small rock one mile S. 8° W. (S. 36° W. mag.) from the Washing-tub and has a ledge extending a short distance west from it. Between the Washing-tub and Little Washing-tub are several shoals, and this passage should not be used.

Flower Shoal, the southern danger of this group, lies 2 miles S. 48° W. (S. 76° W. mag.) from the Washing-tub, and consists of two heads a short distance apart; the shoalest, with 9 feet, breaks only in bad weather.

Butler Rock, with 7 fathoms water, lies 1,350 yards S. 65° W. (N. 87° W. mag.) from Flower Shoal.

Lachlan Rock, with 8 fathoms water, lies nearly a mile S. 37° W. (S. 65° W. mag.) from Kelpy Sunker, and is the southern extreme of rocks extending from that sunker.

Western Sunker, awash at high water, lies $1\frac{1}{2}$ miles S. 53° W. (S. 81° W. mag.) from the Washing-tub. Shoals lie west and SW.

200 yards from it, and a line of shoals blocks the passage between it and the Washing-tub.

Whales Back, awash at high water, lies 1,800 yards westward of the Washing-tub. A shoal stretches a short distance north of this rock.

Foots Cape, a rock with $3\frac{1}{2}$ fathoms water, lies $1\frac{1}{10}$ miles S. 73° W. (N. 79° W. mag.) from the south point of Jude Island.

Bobby Rock, with $3\frac{1}{2}$ fathoms water, lies 1,750 yards N. 17° W. (N. 45° W. mag.) from the Washing-tub, and is steep-to.

Black Rock, westward of Bobby Rock, is 7 feet above high water, and is small and bare. From Black Rock a bank with a general depth of 7 to 10 fathoms extends to Green Islands, on which a shoal, with 3 fathoms water, lies $\frac{1}{2}$ mile N. 5° E. (N. 33° E. mag.) from Black Rock; and a rock, with 4 feet water, lies 150 yards to the eastward of Black Rock.

Black Rock Sunker, with 12 feet water, lies 1,100 yards S. 68° E. (S. 40° E. mag.); a rock, with 10 feet of water, lies 300 yards S. 23° W. (S. 51° W. mag.); a reef 700 yards long lies $\frac{1}{2}$ mile S. 56° W. (S. 84° W. mag.), and a rock that covers 5 feet lies 1,800 yards S. 68° W. (N. 84° W. mag.) from Black Rock.

The following rocks and shoals also lie off Black Rock: Liar Rock, with 4 fathoms water; Haddock Bank, with 10 fathoms water; Four-fathom Shoal, with $3\frac{1}{2}$ fathoms; William Henry Bank, with $8\frac{1}{2}$ fathoms; and Monks Bank, with 6 fathoms water.

Green Islands are a group lying $2\frac{1}{2}$ miles WNW. from the south point of Jude Island.

Green Island, the largest, is 32 feet high and covered with grass over gray rock. Close NE. of it is a small round islet, and two rocks that cover lie NE. of the islet. Long Rock, the southernmost of the group, is bare, dark, and 18 feet high. Dollar Rock, 12 feet high, lies close to the northward of Green Island. A rock, that covers 5 feet, lies west 200 yards from Dollar Rock, and Dollar Rock Sunker, that covers 4 feet, lies 900 yards N. 59° W. (N. 31° W. mag.) from Dollar Rock, with a reef extending NE. and SW. 200 yards from it. Sunken rocks extend to the west, north, and south of Green Islands nearly 1,400 yards.

Flat Islands, a group $4\frac{1}{2}$ miles long and 2 miles broad at the widest part, lie between Jude Island and the mainland, separated from the latter by a channel one mile wide. They consist of two large islands and a great number of smaller islands and rocks.

Yardie Island, the easternmost of the group, is composed of several hillocks, surmounted by a barren cone 130 feet high. A ledge extends 250 yards from the NE. extreme, and islets and rocks, with deep water close south, lie a short distance off the SW. side.

Tinkershare Island, small and wooded, lies close west of Yardie Island.

Glimshire Island, 100 feet high, flat and wooded, is separated from the west side of Yardie Island by a channel 350 yards wide, containing several islets and rocks. A stranger should not take this passage.

Flat Island, the largest of the group, is 2 miles long, and nearly divided into three parts by coves extending from both shores. The eastern part is high and wooded, surmounted by a flat summit 236 feet high, and terminated to the southward in Roche Peak, a remarkable sharp-topped hill 203 feet high. Vinegar Hill, a sharp cone 150 feet high, lies between them. The middle part of the island has a flat range on the east side, with several wooded tufts, the highest 107 feet high, and some lower wooded hills to the westward inclosing a pond. The western part is composed of a flat hill about 100 feet high, a conical mound 82 feet high at the SE. extreme, and several low wooded hills on the NW. shore terminating in sand cliffs.

Flat Island Cove is on the NE. side of the island, between the east and middle parts. It is 700 yards deep and 500 yards wide, affording good anchorage in 8 fathoms, mud, with shelter from all winds but those from north to east. At the head is a shingle beach about 10 feet above high water, containing a saltwater pond, dividing Flat Island Cove from Flat Island Harbor. The water is shoal 100 yards from the head of the cove, the depth decreasing gradually. A ledge extends 300 yards to the eastward from Fooks Point, north of the cove, that should be given a good berth when turning into the cove.

Tides.—It is high water, full and change, in Flat Island Cove at 8h. 27m. Springs rise $6\frac{1}{2}$ feet and neaps 5 feet.

Hay Cove, near the center of the island between the middle and western parts, is filled with sunken rocks nearly to the line of the points. It is much frequented by fishing craft in the caplin season, when that bait is always plentiful. The bottom of the north shore of this island is composed of bowlders, that extend fully 200 yards from the shingle beaches that fringe it. Frenchman Rock, that covers, lies close off the north point.

A Rock, with 10 feet water, lies S. 42° W. (S. 70° W. mag.) from the north extreme of Flat Island, and 500 yards from the shore.

Hiscock Rocks, a group of low islets and sunken rocks, lie close off the SE. end of Flat Islands.

Davis Island, next in size to Flat Island, is $1\frac{1}{5}$ miles long, surmounted at the east end by Osmond Hill, a sharp peak 114 feet high, and at the west end by Mermaid Hill, flat at the summit and 75 feet high. A deep cove runs into the north side, nearly filled

with rocks. This island is separated from the western part of Flat Island by a channel 250 yards wide, and is distant from the east part 600 yards.

Muscle Bank, with a shoal awash at low water, is 600 yards S. 25° E. (S. 3° W. mag.) from the east extreme of Davis Island, and a shoal, with 7 feet water, lies nearly halfway between it and the shore, leaving a passage only 250 yards wide between them and Hiscock Rocks.

Harbor Rock, one foot above high water, lies in the middle of the western channel, and has a shoal extending NW. 150 yards from it. A shoal, with 9 feet least water, lies 500 yards N. 68° W. (N. 40° W. mag.); a rock, with 4 feet water, 400 yards N. 37° W. (N. 9° W. mag.); and a rock that covers 5 feet, 100 yards N. 11° W. (N. 17° E. mag.) from Harbor Rock.

Duck Rock, 5 feet high, is the extreme of a ledge of rocks and shoals stretching off the west point of Davis Island. A shoal, with 3 fathoms water, lies 250 yards north (N. 28° E. mag.) of Duck Rock.

Duck Rock Sunker, with 2 feet water, lies 500 yards north (N. 28° E. mag.) from Duck Rock. There is no passage north of Harbor Rock.

Flat Island Harbor is comprised between Flat and Davis Islands, and may be approached from both sides in small craft, but in large vessels from the SE. side only, and neither should be taken for the first time without a local pilot. On the NW. shore, just within the entrance, is Western Creek, a small indentation, south of which is a bluff head, with speckled white and dark cliffs. The harbor trends away to Hay Cove, off which are an island and several small rocks, and the whole shore is foul. Ledges of rocks extend from Davis Island, leaving a narrow channel close to Western Creek Head, from the western entrance to the harbor. The harbor is $\frac{1}{2}$ mile in diameter, and affords good anchorage in 9 to 7 fathoms, mud, the water shoaling suddenly close to the beach at the head. A large settlement surrounds this harbor.

Woody Island, close south of Davis Island, is a dark double hummock 76 feet high. Bald Island, bare, gray, and 50 feet high, lies south nearly $\frac{1}{2}$ mile from Woody Island.

Copper Island is the southernmost conspicuous island of this group. It is a wooded cone 135 feet high, and shows well from all directions, except when hidden by the higher part of Flat Island. Low Islets extend $\frac{1}{2}$ mile farther south, ending in Copper Island Rock, 6 feet above high water. Between Davis and Copper Islands is a labyrinth of rocks, scarcely passable by a boat.

Paddle Rocks are two shoals, with 3 fathoms water, lying 800 yards apart, the northern being $1\frac{1}{4}$ miles S. 51° W. (S. 79° W. mag.) from Copper Island.

The Pinnacle, a rock with 4 feet water, lies $1\frac{2}{5}$ miles S. 37° W. (S. 65° W. mag.) from Cooper Island, in the middle of the apparent fairway between the mainland and Flat Island, and Upper Pinnacle, with 10 feet water, lies 750 yards S. 37° W. (S. 65° W. mag.) from The Pinnacle.

Coast.—The coast between West Broad Cove and Red Harbor is faced by cliffs that fall from wooded spurs extending from the Blue Hills.

Red Harbor Head, SW. $2\frac{1}{4}$ miles nearly from Broad Cove Head, is a steep cliff with a hole through the base, and a small ledge of rocks just inside.

Red Harbor extends from this head in a northerly direction with a slight bend for $1\frac{1}{4}$ miles, and is 800 yards broad. A projecting point, that looks like an island, lies on the east shore nearly a mile from the entrance, north of which a short distance is a rock that covers 6 feet at high water, and a rock that covers lies off Butler Point, the entrance point on the west shore. The remainder of the harbor is clear of danger. A small islet is nearly joined to the west shore, north of which are a few houses. Two considerable streams discharge into this harbor; the deposit from the western stream has formed a shoal 300 yards from the mouth.

Anchorage may be had in 7 to 8 fathoms, sand, off the houses, with shelter from all winds but those from SE. to South, which send in a heavy swell.

Blue Hills of Red Harbor are a conspicuous flat range, with a steep fall to the eastward, surmounted by two small sharp peaks 1,100 feet high. They appear blue under almost any condition of weather.

The Coast from Red Harbor trends southwesterly $3\frac{1}{4}$ miles to John-the-bay; is steep and rugged, with several high sharp hills about 600 feet high, and is bold-to. The Bar, a shoal with 9 fathoms least water, lies $\frac{1}{2}$ mile S. 34° W. (S. 62° W. mag.) from Red Harbor Head.

Stanley Rocks, that cover one foot at high water, are $1\frac{1}{4}$ miles S. 15° W. (S. 43° W. mag.) from the SE. extreme of Red Harbor Head. The sea breaks on them nearly always, and they are bold-to within a short distance.

Big Shoal, with 4 fathoms water, lies one mile SW. of Stanley Rocks.

Black Rock, small, and awash at high water, with a shoal extending 200 yards to the westward, lies nearly $1\frac{1}{5}$ miles S. 51° W. (S. 79° W. mag.) from Stanley Rocks.

Woody Island, one mile SW. from Black Rock, is wooded, and 25 feet high, with foul ground extending off it in all directions for a short distance, and for a considerable distance to the eastward.

Woody Island Rock, with 5 fathoms on it, lies 200 yards N. 48° E. (N. 76° E. mag.), and **White Rock**, with 4 fathoms water, bears S. 63° E. (S. 34° E. mag.), 600 yards from Woody Island.

John-the-Bay Harbor, 5 miles SW. of Red Harbor, is a shallow basin, where fishing craft find shelter from westerly winds in 3 fathoms. It is 600 yards in diameter and contains several rocks.

An open cove of the same name, $\frac{1}{2}$ mile south of the harbor, locally known as the Dock, is 1,100 yards in diameter and affords good anchorage in 10 fathoms, with winds from SSE. to N. by W. The shores are rugged and foul; at the head is a sand cliff faced by a shingle beach, the east extreme of a marshy isthmus about 50 feet high, that connects the peninsula forming Mortier Bay with the mainland.

The peninsula is surmounted by a round-topped hill 535 feet high, and is covered by high hills, with deep valleys between them, the eastern being a conspicuous cone 490 feet high.

The east coast of this peninsula is of steep cliff, with two slight indentations; Cat Cove, the eastern, having a house in it.

John-the-Bay Islands, 2 miles SE. of Dock Point, lie close off the east point of the peninsula, and are a group of two gray islets, and some low rocks, the highest 44 feet above high water. Rocks that cover lie 200 yards east and north of these islands, and a shoal, with 12 feet water, lies SE. 100 yards.

The coast from these islands trends sharply to the south.

John-the-Bay Head, just west of the islands, is surmounted by a round hill 331 feet high, which shows conspicuously from the line of the coast.

Deadman Cove, west of this head, is exposed and rocky. Boats can find shelter there from off-shore winds.

Salter Hill, a sharp peak 300 feet high, is on the promontory dividing Deadman Cove and Rock Harbor, and slopes steeply to the west shore of Deadman Cove, but gradually to Rock Harbor and Rock Harbor Point, east of the entrance to the harbor.

Numerous shoals are situated off the coast between John-the-Bay and the entrance to Mortier Bay. **Pig Ledge**, the northeastern, with $3\frac{1}{2}$ fathoms, lies $1\frac{1}{2}$ miles from John-the-Bay Islands. **Stickland Rock**, the outermost, with $3\frac{1}{2}$ fathoms, lies nearly $1\frac{1}{2}$ miles from Rock Harbor Point. **Sams Ledge**, with 15 feet, lies nearly $1\frac{1}{2}$ miles from the same point.

Rock Harbor is fit for fishing craft only, and is so called from the number of rocks it contains. For a small craft under command there is no difficulty in entering at low water, as all the rocks show, but at high water a pilot should be taken. The best passage is to keep the east shore on board, until an island that joins the mainland at low water is reached, when the course should be altered

for Howe Islet, a gray rock 10 feet above high water. After passing this islet the vessel should haul to the eastward and anchor in 4 fathoms.

Pinnacle Rock, that covers 6 feet, is the westernmost rock and lies 750 yards westward of Rock Harbor Point. A considerable settlement surrounds this harbor, with the church, a white wooden building, near the head.

The Coast from Rock Harbor to the entrance of Mortier Bay, nearly 2 miles to the southwestward, is of dark cliff backed by wooded hills and is steep-to. In misty weather, the turning point shows as an overhanging cliff, and off it nearly $\frac{1}{4}$ mile are shoals.

Mortier Bay is entered through a channel $1\frac{1}{4}$ miles long and $\frac{1}{4}$ mile wide, at the north end of which the bay opens nearly 2 miles in diameter with deep water and no anchorage, except in the harbors off it.

Saul Islands are close off the east point of the entrance. The southern is 70 feet high, bare and gray, and is conspicuous against the dark background when seen from the southward. The northern is wooded, 92 feet high, and connected to the shore by shoal water. Rocks that cover lie a short distance to the northward. The western island, 11 feet above high water, is bare, and has shoal water stretching off it a short distance to the southward.

Skiff-sail Rock, with 6 feet on it, lies 1,000 yards East (S. 63° E. mag.), and Saul Island Rock, with 6 feet water over it, is 400 yards S. 56° E. (S. 29° E. mag.) from the southernmost of Saul Islands.

Thomas Rock, with $4\frac{1}{4}$ fathoms water, lies one mile S. 56° E. (S. 29° E. mag.) from the southern Saul Island.

Big Head forms the turning point into Mortier Bay on the west side, and is 437 feet high, falling in steep cliffs to the channel and toward the east, but in a gradual slope to north and west. Goolds Cove, a slight indentation with a sandy beach, around which are a few houses, lies just within the entrance on the east shore.

Spanish Room Harbor, at the NE. corner of the bay, is formed by a peninsula composed of shingle debris, $\frac{3}{4}$ mile long and wedge-shaped, the base ending in a bluff, 800 yards wide at the south end, close over which is the summit 111 feet above high water, and the apex, a narrow shingle beach at the north end that joins the mainland, a few feet above high water. An isolated square rock, 30 feet high and covered with grass, lies at the north end of the beach.

Rocks lie off the east point of this peninsula and form the west side of the entrance; the highest is 5 feet above high water, and they are steep-to. The east shore is foul for 200 yards off the cove immediately within the entrance, and a spit extends from the west shore at 800 yards within the rocks, a distance of 400 yards, with 13 feet water at the east extreme.

Water.—A considerable stream, spanned by a bridge, flows into the east side, from which water can be obtained.

Anchorage may be had in the harbor before reaching the spit in 5½ fathoms, mud, with swinging room 800 yards long and 600 yards broad.

Cashel Cove is just NW. of the peninsula forming Spanish Room, and affords anchorage in 6 to 10 fathoms, mud, with shelter in all winds but those from SSE. to WSW.

Cashel Look-out, surmounted by a bowlder 615 feet above high water, is a conspicuous hill lying 1½ miles inland NNW. of Cashel Cove, and shows plainly from Placentia Bay.

The west shore of Mortier Bay slopes from dark wooded hills, the spurs of higher ranges inland, the intervening space being almost filled with lakes. Fox Hill, 595 feet high, is the most conspicuous, and is a little more than a mile inland.

The SW. extreme of the bay narrows to an arm 900 yards broad, that decreases in breadth gradually to a bar at 1½ miles from the entrance.

Anchorage may be had in this arm as convenient in 6 to 9 fathoms, mud.

Jonas Rock, that covers 3 feet, lies 200 yards from the north point of the entrance, joined to it at low water, and rocks extend 100 yards from the south shore. From the bar, which is passable by boats at high water, a narrow salt-water arm extends ½ miles to the southwestward, and nearly joins the head of Burin Inlet. A settlement, called Marytown, has been formed on the banks.

The Tolt, a conspicuous conical hill 701 feet high, lies between the long arm of Marytown and Little Bay. It shows plainly from Placentia Bay, and is continued toward Little Bay by a series of high, wooded, conical hills, the highest over Little Bay making in three summits, the greatest elevation being 564 feet.

Little Bay is entered west of the slopes of Big Head; it extends one mile, with a slight bend, and divides into two arms, the eastern deep inside, but blocked by islets and shoal water, the western shallow from the mouth.

Seal Rock, that covers 3 feet at high water, lies 500 yards N. 59° W. (N. 32° W. mag.) from Eastern Head, to which another rock and shoal water nearly connect it. A shoal extends 100 yards NW. from Seal Rock.

Anchorage may be had in 8 fathoms, mud, immediately within the west point of the entrance, where the bay is 350 yards wide. The bay is barred just within the shingle spit on the east shore. Vessels drawing 13 feet can cross the bar at high-water springs by keeping the east shore close on board, and may careen in safety in the inner basin. Some square islets lie just inside the bar.

Beaubois Cove, on the west side of the entrance to Mortier Bay, is 450 yards long, 200 yards wide, and affords good shelter for a few fishing craft in 2 fathoms. Islets lie in the entrance, and the church, a white wooden building, stands on a slight elevation north of the harbor. This anchorage may be entered by keeping the north shore close on board.

Blow-me-down, a wooded cone 221 feet high, is $\frac{1}{4}$ mile SE. of Beaubois Cove. A rock, awash at high water, lies close to the shore, 200 yards N. 34° W. (N. 7° W. mag.) of Blow-me-down.

Blow-me-down Sunker, with 15 feet water and steep-to, lies 600 yards N. 30° E. (N. 66° E. mag.) from Blow-me-down.

Harbor Rock, with 6 $\frac{1}{2}$ fathoms water, is $\frac{1}{2}$ mile N. 3° W. (N. 24° E. mag.) from Blow-me-down.

Duricle, an open cove, lies 1,400 yards, and Tides Cove $1\frac{1}{5}$ miles southward of Blow-me-down. Both these coves afford anchorage, with offshore winds, in 13 to 7 fathoms. There are houses in both coves.

(H. O. Chart No. 627.)

Croney Island, 170 feet high, is $2\frac{1}{5}$ miles southward of the entrance to Mortier Bay. It is a remarkable conical island, wooded at the summit, with steep cliffs to the northeastward and is bold-to. It is the best land fall to make in foggy weather when trying to reach Mortier Bay from the southward, or Burin from the northward. Several shoals, with 6 to 14 fathoms, lie off this island.

Croney Rock, with 5 fathoms water, lies 250 yards S. 30° E. (S. 3° E. mag.) of Croney Island. Eastward of Croney Island, within a distance of 1,200 yards, are the following rocks and shoals: Croney Shoal, 6 to 8 fathoms; Lawrence Rock, 7 fathoms; Little Green Point Shoal, 8 fathoms, and Green Point Shoal, 9 fathoms.

Black Head Rock, on which there is a depth of 16 feet, lies about 1,200 yards S. 21° E. (S. 6° W. mag.) from Croney Island.

Little Mortier Bay is $1\frac{1}{2}$ miles southward of Croney Island. At the head it divides into two arms. Mortier Creek, the western, is fit for fishing craft only, and has a rock close to the north point.

Fox Cove, the eastern arm, affords good anchorage, though the space is confined in 10 fathoms. There is a settlement on the east shore.

Breakheart Rock, with 14 feet water, lies 250 yards off the west point of Cuckold Cove, a small indentation on the north shore, just within the entrance.

Western Island, a small, black rock, topped with grass, lies off the west side of the bay.

Western Rock, with 3 feet water, lies 350 yards N. 14° W. (N. 13° E. mag.) from Western Island, and there is a rock, with 3 fathoms water over it, between Western Rock and the shore. There are no other dangers, and the bay may be entered in mid-channel.

Mortier Rock, with 3 fathoms water, is the least depth on Mortier Bank, a shoal that covers a space 3 miles long and $\frac{1}{2}$ mile broad within the depth of 20 fathoms. It lies $6\frac{1}{2}$ miles N. 76° E. (S. 77° E. mag.) from Burin lighthouse, and has 6 to 11 fathoms close to all round.

Brandy Rocks, always breaking, lie off the shore within Iron Island, leaving a passage 800 yards wide between them and the island.

Iron Island, 160 feet high, is 2 miles southward of Little Mortier Bay, covered by grass, faced by dark cliffs, and conspicuous from seaward.

Galloper Rock, with 10 feet water, lies S. 85° E. (S. 58° E. mag.) 1,100 yards; **White Horse**, with $4\frac{1}{2}$ fathoms, S. 53° E. (S. 26° E. mag.) 1,150 yards; **Gregory Rock**, with 6 feet, S. 45° W. (S. 72° W. mag.) 800 yards; and **Duck Rock**, with 3 fathoms water, S. 23° W. (S. 50° W. mag.) 1,400 yards from Iron Island.

There is a passage 1,200 yards wide between Gregory Rock and Burin Island.

Burin Harbors consist of several small coves and a long inlet affording excellent shelter for vessels on all sides.

Burin Island forms the seaboard and protects the small coves. It is $2\frac{1}{2}$ miles long, narrow at the northern portion, and at the south extreme is **Dodding Head**, a remarkable conical bluff 400 feet high.

Light.—From a lighthouse on the summit of **Dodding Head** a white revolving light is exhibited, attaining its greatest brilliancy every minute, at an elevation of 430 feet above high water, and visible 24 miles. In consequence of the great height of this light, it is often obscured by fog when the coast line is clear.

Dodding Rock, awash at low water, lies S. 84° E. (S. 57° E. mag.) from the lighthouse, and 600 yards from the shore.

Cockle Rock, with 3 fathoms water, lies 500 yards South of Cat Island, a small island nearly joined to the south extreme of **Dodding Head**.

Great Burin Harbor is on the west side of **Dodding Head**, between Burin and **Shalloway Islands**. It is fit for small vessels only, and has several rocks near the head. Shoal water extends 250 yards West from **Shalloway Head**, the SW. extreme of **Shalloway Island**, and breaks in bad weather. This point should be given a good berth when rounding it.

Mine, Oven, and Hooper Rocks lie off the west side of Burin Island, and in taking Burin Passage between it and the main, the west side of the passage must be kept on board to avoid these rocks.

Port-au-bras, a narrow arm containing good shelter for schooners, runs in north of Burin Island.

Little Burin Harbor is entered $\frac{1}{4}$ mile westward of Charlie Island, situated close to the north point of Burin Island. It affords anchorage in $8\frac{1}{2}$ fathoms, in a space 600 yards long and 400 yards broad, but the entrance, between Jersey and Simmons Islands, is only 100 yards wide, narrowed by a rock on which the depth is 8 feet, lying south of Jersey Island, one-third of the distance across, so that in entering it is necessary to keep Simmons Island, west of the entrance, close aboard.

Communication.—A steamer of the Coastal Steamship Company calls here fortnightly during summer and autumn.

Coal.—A small supply of coal can generally be obtained at Burin.

Ice.—Burin Harbors freeze occasionally during severe winters between the middle of February and early in March, but it is seldom that the ice interferes with the anchorage; eastern ice is occasionally drifted into the shore.

Ship Cove, south of Little Burin Harbor, is 1,200 yards deep and 600 yards wide at the entrance, diminishing gradually to the head. A rock, with 11 feet water over it, lies 50 yards off Troak Point, and a shoal, on which the depth is 3 feet, the same distance off Jeans Point, the next south of Troak Point; both dangers lie in a NE. direction from the respective points.

Anchorage.—Anchorage may be obtained in from 11 to 13 fathoms water, over sand or mud, with good shelter, but in a strong breeze a large vessel should moor.

Poor Island is a small rock situated west of Neck Point, the south extreme of the west shore of Burin Passage.

Poor Rock, with 12 feet water, is the extreme of the ledge extending 350 yards SW. of Poor Island, and is steep-to on the west side.

Woody Island, 100 feet high, 700 yards WNW. of Poor Island, fronts the middle of the entrance to Burin Inlet, and is steep-to on all sides. Shag Rock lies close to the SE. side. There is a clear passage on each side of Woody Island.

Burin Inlet runs in a nearly straight line N. $\frac{1}{4}$ W. 5 miles from Woody Island, is $\frac{1}{4}$ mile wide for 2 miles, and expands to $1\frac{1}{4}$ miles in width at 3 miles from the entrance. To enter, keep the west shore on board to avoid some rocks close to the east point just within the entrance. After passing Spoon Point, $\frac{1}{4}$ mile from the entrance on the west shore, round into Spoon Cove to avoid Stag Rock, the

end of a ledge 400 yards off the east shore. When the entrance points are closed, mid-channel may be kept to the anchorages.

Anchorage may be had off Back Cove, an indentation on the east shore 2 miles from the entrance, in 15 fathoms, south of Sugarloaf, a conspicuous cone 145 feet high, close to the east shore; or farther in northwest of the Sugarloaf in 7 to 9 fathoms, mud. Beyond this the harbor is narrowed by a shallow spit extending from the east shore, and should not be entered.

Water can be procured easily from Big Salmonier, a considerable stream on the west shore of the last anchorage.

Coal.—Small supplies of coal can generally be obtained at Burin Inlet.

Tides.—It is high water, full and change, at Burin Harbors at 8h. 45m. Springs rise $6\frac{1}{2}$ feet, neaps $4\frac{1}{2}$ feet.

Little Burin Island, $1\frac{1}{10}$ miles SW. of Burin Island, is separated from the mainland west of the entrance to Burin Inlet by a deep passage 350 yards wide, and is bold-to on all sides.

Emberly Rock, with 4 fathoms water, lies 1,300 yards S. 39° E. (S. 12° E. mag.) from the NE. extreme of Little Burin Island.

Corbin Island, 250 feet high, steep-to all around, is 1,300 yards SW. of Little Burin Island, separated from the mainland by a deep channel $\frac{1}{2}$ mile wide.

Corbin Harbor, $1\frac{1}{10}$ miles SW. of Corbin Island, is a narrow inlet fit for small vessels, entered between Long Point on the north and Miller Head on the south. All the points of the harbor are foul a short distance off. Goat Island lies close to the west shore, just within the entrance.

Old Harry, awash at low water, lies $\frac{1}{2}$ mile S. 79° E. (S. 52° E. mag.) of Long Point. Goat Island, just open south of Long Point, leads south of Old Harry to the mouth of the harbor.

Shoals extend 300 yards east of Miller Head.

Corbin Head, a wedge-shaped cliff-faced head, 180 feet high and bold-to, is 1,200 yards south of Miller Head.

A Rock, with 10 feet water, lies $\frac{1}{2}$ mile S. 23° W. (S. 50° W. mag.) from Corbin Head, in the middle of the entrance to L'anse au Diable, a small cove SW. of that head.

Bass Rock, with $3\frac{1}{2}$ fathoms water, lies 700 yards S. 42° W. (S. 69° W. mag.) from Bass Point, a hummock with low rocks close to the base, and is 600 yards from the nearest shore.

Sauker Rock, with 3 fathoms water, 400 yards S. 51° E. (S. 78° E. mag.) from Sauker Head, is the outer of three rocks lying off the head. The shore between Sauker Head and Bass Point is foul, and should not be approached within $\frac{1}{2}$ mile.

Little St. Lawrence Harbor, 9 miles to the southwestward of Burin Island, runs in NW. $2\frac{1}{2}$ miles, with a breadth of 800 yards

to a peninsula $1\frac{1}{2}$ miles within the entrance, where it narrows to 300 yards and again expands when the peninsula is passed. The peninsula is 55 feet high, and joined to the east shore by a narrow shingle beach.

Harbor Rock lies 150 yards from the south extreme of the peninsula, and the same distance from the west shore. The east shore of the harbor is foul for 200 yards; the west side is bold-to.

Anchorage.—Large vessels can find temporary anchorage in 11 to 15 fathoms, but a heavy sea rolls in with southerly winds.

Small vessels can lie in safety north of the peninsula in $2\frac{1}{2}$ to 4 fathoms, mud, and to reach there should keep the west shore close on board to avoid Harbor Rock.

Water may be had from a cascade on the east side, just within the peninsula.

Sculpin Shoal, with $3\frac{3}{4}$ fathoms water, lies S. 87° E. (S. 60° E. mag.), 900 yards from Sculpin Point, east of the entrance, close off which is a small rock.

Middle Head, separating Little and Great St. Lawrence Harbors, slopes from Blow-me-down, a conspicuous hill 420 feet high. The shore is bluff, and has deep water close-to. The following shoals are near: Point Rock, with 4 fathoms water, 450 yards; Butler Rock, with 5 fathoms, 450 yards, and Garden Bank, with $9\frac{3}{4}$ fathoms, 1,200 yards from Middle Head.

Great St. Lawrence Harbor is $2\frac{1}{2}$ miles deep, and $\frac{1}{2}$ mile wide for $1\frac{1}{2}$ miles, when it narrows to 600 yards between Blue Beach Point on the west and Herring Cove on the east shore. A beach of shingle, said to be enlarging, stretches 250 yards from the west shore, at 800 yards distance from the head.

Communication.—A steamer from the Coastal Steamship Company calls here fortnightly from St. Johns during summer and autumn.

Anchorage may be obtained in from 10 to 20 fathoms water at the entrance, or in 12 fathoms off Herring Cove, or small vessels may find shelter behind the shingle beach in $2\frac{1}{2}$ fathoms.

The anchorage off Herring Cove is not recommended during SW. winds, as heavy squalls are then experienced, and southerly gales send a heavy sea into the outer part.

Water can be procured from a stream on the east shore opposite the beach of shingle.

Ice.—Great St. Lawrence Harbor seldom freezes so that anchorage can not be obtained, but eastern ice is occasionally drifted into the harbor.

Tides.—It is high water, full and change, in Great St. Lawrence Harbor at 8h. 30m.; springs rise 7 feet, neaps 4 feet.

Chapeau Rouge, a remarkable conical hill 748 feet high, is west of the entrance to Great Lawrence Harbor, and is a good distinguishing mark for this part of the coast. It is the landfall generally made by vessels bound to the south and east coast from the westward, who try to sight it about 20 miles distant.

Rosey Rock, with 12 feet water, 150 yards off the shore just south of Chapeau Rouge, is the only danger off the shore of this hill.

(H. O. Chart No. 1108.)

Cloué Rock, with 10 fathoms water on it, lies S. 23° (S. 4° W. mag.) from Cape Chapeau Rouge, distant 8 miles.

The Coast from Chapeau Rouge to Laun Head, 5 miles distant, consists of several open coves, and may be approached close-to, except just west of a curious pinnacle 250 feet high, close to the shore 1½ miles to the eastward of Laun Head, where a shoal is situated 400 yards from the shore.

Little Laun Harbor is open and exposed, 1½ miles deep and ¼ mile wide, and is 1½ miles north of Laun Head. At the head, a shingle beach nearly separates it from a salt-water pond. There is anchorage with shelter from offshore winds in 9 to 11 fathoms, rocky bottom.

Duck, Tiller, and Black Coves, open bights, lie between Little and Great Laun Harbors.

Great Laun Harbor runs in 1½ miles with a uniform breadth of 800 yards. The shores are bold-to and the water decreases gradually to 5 fathoms, a mile from the entrance, and thence gradually to the head. Murphy Rock, with 5 feet water on it, is the only danger in the harbor, 200 yards off the east shore and 600 yards from the head. There is a settlement, with a church on the east side.

Anchorage may be obtained in 8½ fathoms off the east shore with good shelter.

Vestal Rock, with 6 feet water, lies ½ mile S. 11° W. (S. 38° W. mag.) from East Head; Black Hill, a conspicuous range 520 feet high at the head of the harbor, just open of Laun Point on the east side of the harbor, leads west of this rock to the harbor.

Ice.—Great Laun Harbor seldom freezes to the extent of interfering with anchorage.

Tides.—It is high water, full and change, in Great Laun Harbor at 8h. 15m.; springs rise 7 feet, neaps 4 feet.

Ragged Head, a mile SSW. of Great Laun Harbor, is the dividing point between it and Lansey Bank Cove, and is continued SE. by a point of low rocks.

Ragged Rock, with 6 feet water, lies 450 yards off this point in the line of the rocks. Webber Point, a low projection on the west shore of Great Laun Harbor, open east of Blow-me-down Point next south, leads east of this rock.

Lansey Bank Cove is an open bight affording no shelter.

Colombier Island, 217 feet high, with a small islet close SW., is separated by a clear channel $\frac{1}{2}$ mile wide from Ragged Head; shoals lie 200 yards SE. of the islands.

Swale Island, with shoals extending a short distance SW. from it, lies $1\frac{1}{2}$ miles W. by N. from Colombier Island.

Laun Islands, $2\frac{1}{2}$ miles southwestward of Colombier Island, are named respectively Middle and Offer Islands; the former is 163 feet, and latter island 102 feet.

A rock that uncovers 4 feet at low water lies $\frac{1}{2}$ mile N. 77° W. (N. 50° W. mag.) from the south point of Middle Island.

Southeast Rock, awash at low water, lies 600 yards S. 79° E. (S. 52° E. mag.) from the NE. point of Offer Island, and Southwest Rock, with 10 feet water on it, lies 1,200 yards S. 33° W. (S. 60° W. mag.) from the SW. point of same island.

The coast from Laun Islands to Lamalin consists of deep coves, but they are all exposed.

Taylor Bay, $3\frac{1}{2}$ miles westward of Laun Islands, is the deepest of these; it is an exposed bight, and affords anchorage in 8 fathoms water, with offshore winds. Taylor Bay Rock, with 7 feet water over it, lies 300 yards westward from the point of the same name, and several shoals, with depths of from $5\frac{1}{2}$ to 10 fathoms, lie southwestward of Taylor Bay Point for a distance of 2 miles.

(H. O. Chart No. 1089.)

Lamalin Bay, which is filled with islets and shoals, is divided from Taylor Bay by Point aux Gauls, a low and narrow promontory, 200 yards southward of which is Point Rock, 3 feet high. Barred Island, 19 feet high, lies about $\frac{1}{2}$ mile NW. of Point Rock; 600 yards SSW. of the island is John Thomas Rock, 2 feet high, and NNW. of it Rogers Rocks extend out for about 400 yards.

Light.—An octagonal wooden tower, 36 feet in height, painted red and white on alternate sides, stands on Bluff Head, the SE. point of Allan Island, and from it, at an elevation of 64 feet above high water, a fixed white light is exhibited which should be visible 9 miles.

Communication.—The Coastal Steamship Company's steamer calls here fortnightly from St. Johns during summer and autumn.

Dangers.—**Shag Rock**, 18 feet high, which lies $\frac{1}{2}$ mile S. 23° W. (S. 50° W. mag.) from Point Rock, has shoal water extending from it 400 yards in a northerly direction. Rocks and shoals lie east

and west of Shag Rock as follows: East Sunker, awash at low water, 400 yards N. 47° E. (N. 74° E. mag.); Saint Rock, with 5½ fathoms least water on it, 700 yards S. 34° W. (S. 61° W. mag.); Frank Rock, on which the depth is 13 feet, 1,250 yards S. 52° W. (S. 79° W. mag.); John Walsh Shoal, with 5½ fathoms least water over it, 1,900 yards S. 73° W. (N. 80° W. mag.), and Northwest Sunker, on which the depth is less than 6 feet, 800 yards S. 84° W. (N. 69° W. mag.) from Shag Rock; the center of Morgan Island, named the Bread-box, open west of Allan Island, bearing N. 66° W. (N. 39° W. mag.) clears the shoals SW. of Shag Rock.

Directions.—The entrance to Lamalin Bay is between Rogers Rocks on the east, and the Whalesback, which dries 5 feet, and shoals extending 400 yards from Big Salmonier Rock, 10 feet high, on the west side; Strand Rock, one foot high, lies in the center of Lamalin Bay. The highest part of Berry Hills, in line with Strand Rock, bearing N. 16° E. (N. 43° E. mag.), leads between these dangers into the bay. If intending to pass between Frank Rock and John Walsh Shoal, the highest part of Berry Hills opens west of Barred Island, bearing N. 4° E. (N. 31° E. mag.), leads in mid-channel, and when Taylor Bay Point is in line with Point Rock, bearing N. 63° E. (east mag.), the vessel will be to the northward of the shoals, lying west of Stag Rock, and may be kept to the northward to bring the highest part of Berry Hills in line with Strand Rock, the leading mark for the entrance.

Bluff Head Shoal, with 4½ fathoms least water over it, lies with Bluff Head lighthouse bearing N. 24° W. (N. 3° E. mag.), distant ¼ mile.

Page Rock, on which the depth is 4½ fathoms, lies with Bluff Head lighthouse bearing N. 24° E. (N. 51° E. mag.), distant 1,300 yards.

Lamalin Harbor, situated northward of Allan Island, is suitable only for fishing craft during the summer months; a considerable settlement is situated on the north shore of the island.

Small vessels find an anchorage in Lamalin Harbor, north of Allan Island, but none should attempt it without a pilot, and they must be prepared to leave should a breeze set in from ESE. round by south, to SW.

Lamalin Road, formed by Allan Island on the east and Morgan Island on the west, affords anchorage in 4½ fathoms water, but should be used for temporary shelter only, as the swell always rolls in.

Besides a shoal with 7 feet least water over it, other shoals, with from 13 to 30 feet water, lie near the middle of the entrance, but may be avoided by keeping either shore aboard.

The westernmost barn, on the north shore of Lamalin Road, open east of Morgan Island, bearing N. 19° W. (N. 8° E. mag.), clears these shoals passing to the eastward.

Some islets lie off the SW. extreme of Morgan Island, and a rock with 9 feet water is situated nearly 200 yards from the outer.

Ice.—Lamalin Harbor is occasionally closed by field ice, to the thickness of 6 inches for ten days at a time, but at intervals of from five to ten years it is frozen over; vessels arrive about June and leave in November.

Tides.—It is high water, full and change, in Lamalin Harbor at 8h. 25m.; springs rise 7½ feet, neaps 5½ feet; neaps range 4½ feet.

(H. O. Chart No. 1108.)

Coast.—From Lamalin to Crew Point, 8 miles to the north-westward, the coast is low and fronted by sandy beaches, rising to a moderate elevation in long sloping hills some distance inland.

Some of the most conspicuous objects near the shore are Piercy Hill, wooded, about 100 feet high, at 2 miles westward of Lamalin Road; it has a double summit, near which are some houses. Flagstaff Point is a small conical hillock 26 feet high. Groups of white houses are situated at High Beach.

Lamalin Ledges are dangerous reefs extending along the whole of this coast at a distance of 3 miles from the shore, and in bad weather are apparently a mass of breakers.

No vessel should venture between these shoals without a local pilot; and very few of the fishermen are trustworthy in that capacity; they have a knowledge only of the fishing banks frequented by them. At night this coast should on no account be approached in a less depth than 40 fathoms.

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CHAPTER IV.

ST. PIERRE AND MIQUELON ISLANDS.

(H. O. Chart No. 1055.)

St. Pierre Island, 10 miles SW. of Crew Point, is barren in appearance and irregular in its outline, which appears from a distance to be composed of many peaks, the highest of which is 671 feet above high water, and is thus easily distinguished from Little Miquelon or Langlade, the outline of which is nearly horizontal. At the SE. extreme is a conspicuous conical hill joined by a low neck to the mainland, called Galantry Head.

The harbor is on the east side of the island between it and Chien Island, and may be approached by three channels between the islands.

Light.—Galantry Head is surmounted by a lighthouse 38 feet in height, painted white, and having a square building adjoining it. It exhibits, at an elevation of 210 feet, a flashing light showing a flash every ten seconds; the flashes occur in the order of two white followed at an interval of ten seconds by one red. The light should be visible 18 miles, but is obscured on the north by the bluffs of St. Pierre. Reported very irregular.

Fog Signal.—Near Galantry lighthouse, during thick or foggy weather and in snow storms, a steam fog whistle will be sounded in blasts of six seconds duration every minute, with an interval of fifty-four seconds between each blast. The whistle has been heard from a distance of 7 miles. This fog signal will be in operation from about March 1 to December 1; but from December 1 to March 1 only at the time of the expected arrival at St. Pierre of the fortnightly mail steamer from Halifax.

The fog-signal house is a semicylindrical tower situated SE., 33 yards from the lighthouse.

Should the whistle be out of order, a gun will be fired at the lighthouse once every half hour.

Signal Station.—Information as to ice, wind, temperature, and weather indications may be obtained, during the months of April and May, by communicating with the signal station on Galantry Head.

Cape Noir and Chasseurs Island, two islets close to Galantry Head, are steep-to on the south and east sides.

Indre Shoal, with 2 fathoms over it at low water, lies 250 yards S. 53° W. (S. 80° W. mag.) from Cape Noir Island, east point.

Blanche Point, nearly a mile to the southwestward of Chasseurs Island, is the rocky termination of a conical peninsula, Little Harbor Head, 69 feet above high water. On this point is a conspicuous square rock.

Ravenel Bay runs in west of this point, and is the landing place of some telegraphic cables. The east shore is foul, but near the west shore there is a fine, clear, sandy bottom, with $4\frac{1}{2}$ fathoms water and good shelter from offshore winds. Le Diamant, a peaked rock, lies off the west point of this cove.

Shoals.—Two shoals, each with 3 fathoms water over it, lie in the entrance of Ravenel Bay; the outer, from which the top of the rock off Diamant Point bears S. 80° W. (N. 73° W. mag.), distant $\frac{1}{2}$ mile.

Savoyard Point is the SW. extreme of the island, and is a prolongation of the fall of the high land.

Savoyard Shoal, with 3 feet water, lies 350 yards SW. of this point, and between it and Diamant Point are several shoals, the outer of which, Belier Shoal, with 6 feet water, is $\frac{1}{2}$ mile N. 82° W. (N. 55° W. mag.) from Diamant Point, and $\frac{1}{2}$ mile offshore. The west shore of the island falls steeply to the sea and is bold-to.

(H. O. Chart No. 1056)

Henry Point, the north extreme of the island, is a low peninsula under high land. A shoal, with 12 feet water, lies close-to, and a bank, with $4\frac{1}{2}$ fathoms, lies NE. 350 yards from the point.

Great Colombier, 492 feet above high water, is bold, dark, and steep, lying off the north end of St. Pierre, separated by Henry Channel, 600 yards wide. A shoal, on which the depth is $2\frac{1}{2}$ fathoms, lies close to the west point of Great Colombier.

Little Shoal lies 450 yards N. 25° E. (N. 52° E. mag.) of the west point of Grand Colombier.

The head of the rock is solid, has a diameter of about 50 feet, and is covered with $4\frac{1}{2}$ feet of water. At a distance of 17 yards all around depths of 26 feet are found, and at 33 yards from 46 to 49 feet; bottom, sand, rock, coral, and pebbles.

The rock is covered with seaweed.

Little Colombier lies 180 yards NE. of Great Colombier, with a clear channel between.

Colombier Shoal, with 12 feet water, lies N. 36° E. (N. 63° E. mag.) 600 yards from Little Colombier SE. point.

Cape Blanc and Cape Rouge are so called from the color of the cliffs. The former is 600 yards SE. of Henry Point, and $\frac{1}{2}$ mile farther SE. is Cape Rouge, a high red cliff. The coast is bold-to from Cape Blanc to Cape Rouge.

Cape Rouge Shoals lie off the cape, the eastern of which, with 12 feet water, is 400 yards distant.

Cape Aigle is south 800 yards from Cape Rouge, and the shore is foul.

Little St. Pierre, a small islet, steep-to on the east side, lies $\frac{1}{4}$ mile ENE. of Cape Aigle, and is 17 feet high. There is no passage between it and the main for ships.

Beacon.—A stone beacon, 16 feet high and painted black and white in horizontal bands, stands on this islet.

Zôé Bank, on which there is about one foot water, extends about 300 yards from the shore north from Canon Point.

Buoy.—The eastern edge of Zôé Bank is marked by a buoy.

Canon Point is a reef of rocks extending eastward from St. Pierre.

Lights.—The lighthouse at the extreme of Canon Point is a square white building, 33 feet in height, with its SW. and SE. sides painted red; it exhibits, at an elevation of 36 feet, a fixed white light, which should be visible 6 miles.

At $\frac{1}{4}$ mile N. 72° W. (N. 45° W. mag.) of Canon Point light is a similar shaped and painted lighthouse, 36 feet in height, from which a fixed red light is shown, at an elevation of 64 feet, which should be visible 3 miles in clear weather.

These leading lights in line, bearing N. 73° W. (N. 46° W. mag.), lead in mid-channel through the south entrance, and indicate the best water between Bertrand Rocks and Chien Island.

La Vache is a rock situated 200 yards southward of the lighthouse on Canon Point.

Beacon.—A beacon, 8 feet in height, stands on La Vache Rock.

Bertrand Rocks, $\frac{1}{4}$ mile SE. of Canon Point, consist of low rocks extending 350 yards from the shore. Between Canon Point and Bertrand Rocks is the inner harbor of St. Pierre, which is shoal and contracted by Moules Island.

Beacon.—A tower, 28 feet above the sea, and painted black and white, stands on the eastern of the Bertrand Rocks. Vessels must pass northeastward of this beacon.

St. Louis Bank, with 4 feet water over it, lies 250 yards NW. by W. from the beacon on Bertrand Rocks.

Buoy.—The eastern side of St. Louis Bank is marked by a buoy, and the lighthouses in line, bearing N. 73° W. (N. 46° W. mag.), lead NE. of this bank.

Clorinde Shoal, with 1 $\frac{1}{2}$ fathoms over it, lies 300 yards S. 40° E. (S. 13° E. mag.) of Leconte Point light.

Chien Island is low, separated by South Channel, 500 yards wide, from Bertrand Rocks, and is easily distinguished by a church and a lighthouse. It is foul all around.

Light.—On Leconte Point, the SW. point of Chien Island, is a lighthouse painted red, from which is exhibited a fixed light at an elevation of 62 feet above high water. The light shows white between the bearings of N. 64° W. (N. 37° W. mag.) and N. 24° W. (N. 3° E. mag.); red from N. 24° W. (N. 3° E. mag.) round by east to S. 81° E. (S. 54° E. mag.), and it should be visible 7 miles.

Massacre Island is a low islet 300 yards westward of Chien Island.

Le Flétan is a rock situated near the western edge of the bank extending from the west side of Chien Island.

Buoy.—The northern side of Le Flétan Rock is marked by a buoy.

Vainqueur Island lies NE. of Chien Island, and is separated from it by Flétans Channel, 600 yards wide. Cape Chèvre, a mound 102 feet high, is at the north end of this island, off which, distant 200 yards, lies Plat Rock, 18 feet above high water. Black Rock, 20 feet above high water, lies 700 yards eastward from the same cape; SE. of Vainqueur Island is Pelée Island, joined to it at low water.

Pigeon Island, NNW. 300 yards from Vainqueur Island, is wedge-shaped, the highest part, 90 feet above high water, being over the north end. From this end some islets, Les Canailles, extend 300 yards and are steep-to on the west and north sides.

Haché Rock, 16 feet high, lies 300 yards off the east point of Pigeon Island.

Groz-nez, a conspicuous rock, 27 feet high, lies in Flétans Channel between Chien Island and Vainqueur Island.

From Black Rock to Diamant Point the coast is bordered by rocks and shoals, some of which are nearly a mile from the shore. The following are the most dangerous:

Enfant Perdu, a small rock, 3 feet above high water, is ESE. 1,200 yards ESE. from Pelée Island.

Little Shoal, with 10 feet water on it, is 400 yards beyond in the same direction.

Great Shoal lies 650 yards N. 57° E. (N. 84° E. mag.) from Enfant Perdu, and has 5 feet water on it.

Les Cailloux de terre is a large bank, with 3½ fathoms least water, SW. nearly ½ mile from Enfant Perdu.

Bataille Bank, with 3½ fathoms water, lies 1,300 yards ESE. from the lighthouse on Chien Island.

A Rock, covered with 2 fathoms at low water, lies on the southern edge of this bank.

Gélin Shoal, with 6 fathoms water, lies ENE. ½ E. 1½ miles, and Caillou au Chat, with 8 fathoms, E. by N. nearly a mile from Galantry Head light.

Cat Rock, with 5 fathoms over it, lies $1\frac{1}{2}$ miles N. 82° E. (S. 71° E. mag.) from Galantry Head light.

Clearing Marks.—Henry Point, the north extreme of St. Pierre, open north of Les Canailles, bearing N. 60° W. (N. 33° W. mag.), leads NE. of all the above rocks. Blanche Point, open south of Chasseurs Island, bearing S. 65° W. (N. 88° W. mag.), leads south of these dangers, with the exception of Cat Rock; when in the vicinity of the supposed position of that danger, the whole of Little Harbor Head Peninsula should be open of Chasseurs Island, bearing S. 83° W. (N. 70° W. mag.), to lead south.

Les Grappinots, with 7 fathoms water, lies 600 yards ESE. from Chasseurs Island.

Grappin Shoal, with $4\frac{1}{2}$ fathoms water, lies SSE. $\frac{1}{2}$ E. $\frac{1}{2}$ mile, nearly, from Chasseurs Island.

Tournioure Shoals are three in number, the center of which, and the shoaler, has 10 feet water, and is SW. $\frac{1}{2}$ W. a little more than $\frac{1}{2}$ mile from Blanche Point.

Bonnière Shoal, with 6 fathoms water, lies $1\frac{1}{2}$ miles SW. by S. from Blanche Point.

Marne Shoal, with 15 feet water, is situated south a little more than a mile from Diamant Point.

St. Pierre.—The town of St. Pierre stands on the northern side of the Barachois de St. Pierre, or inner harbor, and is the residence of the Governor of the French Islands; it is also the headquarters for the French squadron in Newfoundland. In 1892 the population was 5,703; during the fishing season some thousands are temporarily added to this number. The chief buildings are the Governor's house, the courts of justice, a large church and convent, and the treasury and post office.

The United States is represented by a consular agent.

Communication.—The Boston, Halifax, and Prince Edwards Steamship Company's steamships bring the mails twice a month; there is a steamer from Halifax to Newfoundland which calls at St. Pierre, and a fortnightly steamer from Halifax to the Bras d'Or Lakes, Cape Breton, St. Pierre, and Placentia.

Submarine Telegraph Cables.—There are two submarine cables between France and St. Pierre; two between Newfoundland and Cape Breton, via St. Pierre; two between St. Pierre and Massachusetts, U. S., and one between St. Pierre and Cape Breton; two of the cables are landed at St. Pierre Harbor.

Coal and Supplies.—Provisions and water can be obtained, also coal; about 1,000 tons available.

Patent slips.—There are two patent slips and another building. No. 1 is 147 feet in length, will take up a vessel of 300 tons, and has $9\frac{1}{2}$ feet forward and $13\frac{1}{2}$ feet aft on the blocks; No. 2 is 75 feet

in length, will take up a vessel of 100 tons, and has 8½ feet forward and 11½ feet aft on the blocks.

Pilots.—The employment of a pilot to enter this port is compulsory for vessels of 80 tons and over, and the payment will be enforced if a properly distinguished pilot offers his services, whether accepted or not. The pilot boats are painted red and blue, and fly a blue flag. One of the port officers directs vessels where to anchor.

Pilot Charges.—Vessels of war, \$11 to \$15. Merchant vessels from 80 to 100 tons, \$5; 100 to 120 tons, \$6; 120 to 160, \$7; 160 to 200, \$8; 200 to 300 tons, \$9. For larger vessels, \$1 per 100 tons. Detention, \$2 per day.

Dues.—Twenty-five cents per net registered ton.

Ice.—St. Pierre Harbor was frozen over in 1874, this being the only occasion during the last forty years. Field ice appears in February and disappears about the end of March; it rarely closes the harbor, and vessels come and go all the year round.

Hospital.—There is a hospital having 70 beds, but before a patient can be admitted a permit must be obtained from the Governor or Commandant. Charges, \$1.40 per day for each man. The lazaretto is on Chien Island.

Telephone Cable.—A telephone cable connects St. Pierre with Chien Island. The cable starts from a point a little to westward of Cape Aigle, runs in the direction of Little St. Pierre, and near that islet turns to the southward and lands in Tréhouart Cove.

Vessels should avoid anchoring over this cable, and in case it should be picked up by their anchors it should be dropped and care taken not to damage it.

Anchorage.—Large vessels may anchor as convenient between a line drawn NNW. from the battery on Chien Island and a line NW. by N. from the east point of Massacre Island, in which space there are from 7 to 15 fathoms water in mid-channel. The most dangerous winds are from NE., whereby the heaviest sea is produced, and to guard against which vessels should moor.

No vessels should proceed south of this anchorage without local knowledge or without a pilot.

Directions for St. Pierre Harbor.—North Channel, between Pigeon and St. Pierre Islands, is wide and easy for sailing vessels working to windward; it is the only one that should be taken by large vessels.

From the eastward, Henry Point open north of Les Canailles, bearing N. 60° E. (N. 33° W. mag.), clears Great Shoal and the islets off Vainqueur and Pigeon Islands may be approached close to. When standing in north of Little St. Pierre, that islet must be kept open west of the battery on the NW. point of Chien

Island, bearing S. 3° W. (S. 30° W. mag.), to clear Cape Rouge Shoals.

When working to windward, care should be taken to guard against the squalls that sweep down from the high land between Great Colombier and Cape Diable on the north and Cape Aigle on the south side.

When working along the coast of Chien Island, the lighthouse on Canon Point should be kept open of the west point of Massacre Island, bearing S. 51° W. (S. 78° W. mag.), in order to clear the shoals off the west shore of Chien Island.

At Night, the red light, near the town of St. Pierre, open of Cape Aigle, bearing S. 51° W. (S. 78° W. mag.), clears Cape Rouge Shoals.

Directions for South Channel.—This channel is between Bertrand Rocks and Chien Island, and will admit vessels drawing less than 14 feet water. The lighthouse north of the town in line with Canon Point lighthouse, bearing N. 73° W. (N. 46° W. mag.), leads between St. Louis Bank and Rallier Shoal, but the channel is barely 200 yards wide; when Cape Aigle and the east extreme of Massacre Island are touching, bearing N. 11° E. (N. 38° E. mag.), N. 40° W. (N. 13° W. mag.), course should be steered for the beacon standing on a large white stone on the brow of the hill northward of the town, until Vigie d'Aigremont, a hillock 87 feet high, south of the town, is in line with the lighthouse on Canon Point, S. 27° W. (S. 54° W. mag.); this mark will lead to the anchorage.

At Night.—The sector of white light from Leconte Point lighthouse shows over Caillou au Chat, Gelin Shoal and the assumed position of Cat Rock, but by keeping in the white sector between the bearings of N. 24° W. (N. 3° E. mag.) and N. 41° W. (N. 14° W. mag.), South Channel may be approached between these dangers and Indre Shoal. The leading lights in line, bearing N. 73° W. (N. 46° W. mag.), lead NE. of Gelin Shoal, close southward of Bataille Bank and across the bar between St. Louis Bank and Rallier Shoal.

Flétans Channel.—To enter St. Pierre Harbor by this channel, steer N. 72° W. (N. 45° W. mag.) for Leconte Point lighthouse, and when Cape Bawdry, the NE. extreme of Chien Island, comes in line with Gros-nez Rock, bearing N. 15° W. (N. 12° E. mag.), that mark should be kept on until within 200 yards of Gros-nez Rock, passing between the shoals off Chien and Vainqueur Islands. Gros-nez should be left 100 yards to the westward, and thence a course made to pass 200 yards east of Cape Bawdry, when the anchorage may be steered for.

Directions in Foggy Weather.—In consequence of the many outlying rocks, it is extremely hazardous to approach St. Pierre

during fogs. If obliged to make the attempt, which should not be attempted except in a steamer, a few hints may be useful. If tolerably sure of the position, an endeavor should be made to sight land in the vicinity of Cape Coupé on the south coast of Little Miquelon Island, and then steer across for the west side of St. Pierre; coast that island to the northward, and then pass through Henry Channel, close south of Great Colombier, to its SE. point, whence steer S. 40° E. (S. 13° E. mag.) for 1½ miles and S. 56° W. (S. 83° W. mag.) one mile to the anchorage. This should not be attempted by a steamer unless Little Miquelon Island has been seen before the fog came down and bearings taken of it, and above all in moderate weather.

Barachois de St. Pierre, or the inner harbor, is available for small vessels only. The holding ground is indifferent, there is little sea, and vessels that ground are rarely damaged. A number of schooners lay up there for the winter.

The harbor has been partly dredged, and there is not less than 10 feet at low water on the bar entrance (1895).

Buoys.—Two warping buoys are moored between Moules Island and Canon Point.

Tides.—It is high water, full and change, at St. Pierre at 8h. 33m.; springs rise 6½ feet, neaps 4½ feet.

Tidal Streams.—The flood stream flows to the northward through South and Flétans Channels, and out to the northeastward through North Channel, but this regularity is only found near the shore. At a short distance seaward, the current runs almost constantly to the northward, and is very little influenced by the feeble tidal stream of these localities. In the anchorage, the tidal stream is sometimes of sufficient force to swing ships against a strong breeze. The ebb flows in the opposite direction to the flood.

Between St. Pierre and Little Miquelon the flood stream runs NE. in the direction of the channel, and turns one or 1½ hours after high water, but often continues to run in the same direction all through the ebb at a reduced rate. The currents and tides are, however, very irregular, and no dependence can be placed on any particular direction or rate.

Od Fishery.—This industry is principally prosecuted by vessels equipped at the northern ports of France, averaging from 120 to 200 tons each, and which leave on the 1st of March. Some proceed at once to the Newfoundland Banks, but the great number go first to St. Pierre for herring, and they all return to St. Pierre for a second supply of bait in June. The method adopted is for the vessels to anchor on the Banks, while bultows are laid out in large undecked boats, sometimes as far as 6 miles from the vessel. This system is attended by frequent loss of life, the boats being

unable at times to return to the vessels, and the latter occasionally go down at their anchors.

On the west coast of Newfoundland the vessels follow the fish from south to north till the caplin have disappeared, when they repair to the several ports at which the catch is to be cured, and after the vessels are moored, the crews fish with bultows off their respective anchorages till the end of the season.

On the north coast of Newfoundland vessels have a position assigned to each for a term of five years, and they proceed direct from France to these posts, where they are moored. The crew then fish with seine, hook and line, or bultows.

(H. O. Chart No. 1055.)

Green Island, N. 40° E. (N. 67° E. mag.) 4½ miles from the east point of Great Colombier, is ½ mile long, 156 feet high, and is so called from the color. Southward ¾ mile from it are some islets, the outer of which, *Enfant Perdu*, is 1½ miles south from Green Island.

A Rock that covers at two-thirds flood is the eastern of these rocks, and is ½ mile S. 5° E. (S. 22° W. mag.) from the east point of Green Island. There is a good passage between Green Island and the islets off it, and the water is deep all round this group.

Little Miquelon or Langlade Island, 3 miles NW. of St. Pierre Island, is steep-to, and the sides are cliffy except at the north part. The summit, nearly flat, has an elevation of 656 feet. The general appearance is flat, but when seen from the westward some hummocks show out at the north end. From the south extreme of Little Miquelon to the south end of the sandy neck joining it to Great Miquelon is 7 miles; the sandy neck is 5½ miles long, and from its north extremity to the north point of Great Miquelon is 9 miles. At the north extreme of the shingle beach is a large pond, called *Great Barachois*, to which small schooners find access at high water, entering from the east side of the beach.

A Reef, which breaks, extends about 200 yards from Plate Point, the west extreme of the island.

Light.—The lighthouse on Plate Point, 127 feet in height, painted black and white in horizontal bands, exhibits, at an elevation of 154 feet, a fixed white light, which should be visible in clear weather from 10 to 12 miles.

Fog Signal.—During thick weather, fogs, or snowstorms, a siren is sounded twice every minute as follows: sound for eight seconds, silence eight seconds, sound for eight seconds, followed by silence of thirty-six seconds.

The siren produces a trembling sound, and is shriller than that on *Galantry Head*. Should the siren be disabled, a gun will be fired at intervals of twenty minutes.

La Baie, as the passage between St. Pierre and Little Miquelon is named by the inhabitants, is deep and the shores forming it are bold.

Anchorage may be obtained on the east side of the long shingle beach which joins Great Miquelon and Little Miquelon Islands, but it is exposed. The best place is off the north shore of Little Miquelon in $6\frac{1}{2}$ fathoms, near a cove just east of the guard station.

Great Miquelon Island is very irregular in outline, with hills ranging from 656 to 813 feet in height. From the NW. extreme a tongue of land extends in nearly a semicircle, forming Miquelon Road. On this tongue are several conspicuous hills and a large settlement with a prominent church; in 1892 the population was 544. Cape Miquelon, the north extreme, is a steep cliff 600 feet high and bold-to.

Shoal.—A dangerous shoal, with 2 fathoms water on it, lies westward of Great Miquelon Island, with Seal Rocks bearing N. 44° W. (N. 71° W. mag.), distant about 2 miles.

Briand Shoal, which is dangerous, lies off the west coast of Great Miquelon Island, about $1\frac{1}{2}$ miles from the nearest shore; it is very small in extent, has 13 feet water over it, and 11 fathoms around; from it Cape Blanc lighthouse bears N. 24° E. (N. 52° E. mag.), and Chapeau de Miquelon N. 76° E. (S. 77° E. mag.).

Caution.—Mariners are recommended not to use the channel between Seal Rocks and Great Miquelon Island until further examination of the locality has been made.

Chatte Rocks are on a shoal which stretches off about 1,200 yards from the south side of Miquelon Road, $\frac{1}{2}$ mile from a point a little more than $\frac{1}{2}$ mile NNE. of Chapeau de Miquelon, a conical hill, 374 feet high, on the north shore of Great Miquelon.

Buoy.—A buoy, painted black and white in horizontal bands, is moored in 19 feet water, 66 yards northward of Chatte Rocks.

Light.—A lighthouse, 49 feet in height, the lower part of which is colored white, and the upper part black, with a white lantern, stands on Cape Blanc, on the NW. point of Great Miquelon, and exhibits, at an elevation of 103 feet, an intermittent white light, with red sector; every minute one flash of 10 seconds duration. It is visible, white 16, red 15 miles.

The red sector is partially obscured to the northeastward by Calvary Hills; it is not visible southward of a line passing about 220 yards northward of Chatte Rocks, so that vessels approaching Miquelon Road, with the light in sight, will pass northward of Outer Miquelon and Chatte Rocks; it is also obscured to the southward by the hills of Great Miquelon Island.

The ray of red light shown over Seal Rocks extends about one mile northwestward and $1\frac{1}{2}$ miles southeastward of that group.

Anchorage.—Sheltered anchorage may be obtained with winds from north round by west to S. by E., in 6 fathoms water, off the settlement, with fair holding ground.

Seal Rocks are two groups of dangerous rocks, $\frac{1}{2}$ mile from each other; the highest, 18 feet above high water, is $6\frac{1}{2}$ miles S. 48° W. (S. 75° W. mag.) from Cape Blanc light, and is steep-to all around.

Miquelon Rocks are a group of rocks on a shoal spit extending $1\frac{1}{2}$ miles in an easterly direction from Soldier Point, 5 miles to the southeastward of Miquelon Road. The eastern and highest is nearly $1\frac{1}{2}$ miles from the point, about 10 feet above high water, and steep-to on the east side.

Outer Miquelon Rock, on which the depth is 10 feet, is the easternmost danger from Soldier Point, and lies $2\frac{1}{2}$ miles N. 34° E. (N. 61° E. mag.) from the eastern Miquelon Rock. A shoal, with $7\frac{1}{2}$ fathoms water over it, lies about 800 yards S. 63° W. (West mag.) of Outer Miquelon Rock, and Patracan, with the same depth of water over it, is $2\frac{1}{2}$ miles N. 67° E. (S. 86° E. mag.) from Soldier Point. Landry Bank, on which the depth is $4\frac{1}{2}$ fathoms, lies $2\frac{1}{2}$ miles S. 85° E. (S. 58° E. mag.) from the same point.

Tides.—It is high water, full and change, in Miquelon Roads at 8h. 33m.; springs rise $3\frac{1}{2}$ feet.

CHAPTER V.

NEWFOUNDLAND, SOUTH COAST.—CREW POINT TO CAPE RAY.

(H. O. Chart No. 1103.)

Fortune Bay.—From Crew Point to Pass Island is N. by W. 35 miles, forming the entrance to Fortune Bay, about 67 miles deep, containing numerous bays, harbors, and islands.

Caution.—The currents are irregular in this bay, especially in the neighborhood of the Plate and Brunet Islands.

At night or in thick weather, too much dependence should not be placed on the soundings, as the water is often as deep near the shores as in the middle of the bay.

Brunet Island, nearly in the middle of the entrance to Fortune Bay, is surmounted by a ridge 528 feet high, extending from the west extreme along the north shore, while at the east extreme are several hills, that appear from a distance as separate islands.

Light.—Mercer Head lighthouse, 30 feet in height, a square building painted white with a red roof, and a tower rising from its center, exhibits, at an elevation of 408 feet, a flashing white light every ten seconds, visible in all directions except when obscured by the land between the bearings N. 85° E. (S. 68° E. mag.) and S. 28° E. (S. 1° E. mag.). The light should be visible 23 miles, but, from its great height, it is frequently obscured by fog, when the land below is seen.

Fish Rock, with 3½ fathoms over it, lies 600 yards S. 6° W. (S. 33° W. mag.) from the lighthouse on Mercer Head.

Anchorage.—There is fair anchorage for vessels in a bay off the east side in from 6 to 13 fathoms water, with shelter from southerly and westerly winds, but some rocks that are off the head of the bay, nearly ½ mile from the shore, should be guarded against, also a shoal, with 15 feet water over it, lying 800 yards N. 87° W. (N. 60° W. mag.) from Little Cape.

Mercer Cove, on the south side of the island, affords good sheltered anchorage for small vessels in from 3 to 6 fathoms water, eastward of Harbor Rock (awash at high water) in the middle of the cove, which may be passed on either side. The entrance, ¼ mile in width, is between Major Point on the north, and Pancake, 18 feet high, on the south side, and the cove is ¾ mile deep, the water in it shoaling toward the head; there are several houses on the shores.

Harbor Shoal, with 4½ fathoms water over it, lies 700 yards south (S. 27° W. mag.) from Major Point.

Water.—Water may be obtained from streams flowing into this cove.

Ice.—Ice approached Brunet Island between 20th March and 5th April, 1867; this may be considered as the western inshore limit of the eastern ice.

Tides.—It is high water, full and change, at Brunet Island at 9h. 3m.; springs rise $6\frac{1}{4}$ feet, neaps $4\frac{1}{4}$ feet.

Little Brunet Islands are a group lying close off the south coast of Brunet Island.

Bird Island has a sharp peak 384 feet high, and $\frac{1}{2}$ mile west of it lie Brandies Rocks, which uncover 2 feet at low water.

Puffin Bank, with $3\frac{1}{2}$ fathoms water over it, lies 1,400 yards eastward of Puffin Island.

Plate Islands are three rocky islets; Big Plate Island, the nearest, is 49 feet high and lies WSW. $4\frac{1}{4}$ miles SW. from the west end of Brunet Island; Little Plate Island, the southernmost, is 33 feet high and $1\frac{1}{2}$ miles farther SW.

As will be seen by the chart, numerous dangers surround these islands; all those with less than 10 fathoms are said to break in bad weather, and they should not be approached within a mile.

Sagona Island, 256 feet high, is 6 miles NNE. from Little Cape. On the west side is a small inlet, only suitable for fishing vessels; and a sunken rock in the middle of the entrance makes the passage difficult except in very fine weather. Numerous banks, some of which break in bad weather, surround Sagona Island.

Crew Point (formerly known as May Point), the south extreme of Fortune Bay, may be recognized by Sugarloaf, a conspicuous conical rock 26 feet high, and close southward of the point is a cluster of houses and a flagstaff. A dangerous ledge of rocks extend 1,200 yards westward from the point, and Crew Point Shoal, with $5\frac{1}{2}$ fathoms water over it, lies $1\frac{1}{4}$ miles S. 57° W. (S. 84° W. mag.) from the point. Little Dantzic Cove lies $1\frac{1}{2}$ miles north of Crew Point, and 2 miles beyond is situated Great Dantzic Cove, the north point of which is Dantzic Point. The holding ground in this cove is bad.

Fortune Head, $7\frac{1}{4}$ miles NE. of Dantzic Point, is formed of steep cliffs, with rocks off-lying for 200 yards; over the west extreme of the head is a hillock.

Fortune, $\frac{1}{2}$ mile SE. from Fortune Head, has anchorage off the village in from 6 to 10 fathoms water, but the holding ground is very bad, the bottom being of smooth rock. The best holding ground is well over toward Fortune Head in 7 fathoms water, but the anchorage should only be used in fine weather. At the west end of the village is a shallow basin protected by two breakwaters, into which fishing vessels can enter at quarter flood.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls fortnightly during summer and autumn.

Ice.—Fortune Bay is stated to have been only once frozen over during the last twenty-five years, and the harbor is always open.

Jerseyman Bank, the south extreme of which is 6 miles south-westward of Dantzic Point, extends nearly 10 miles in a general north and south direction, and has on it from 20 to 24 fathoms water.

Grand Bank Head, $3\frac{1}{2}$ miles NE. by E. of Fortune Head, is steep, and 187 feet high. Admiral Cove, immediately east of this cape, affords anchorage in from 5 to 10 fathoms water, as convenient.

The village of Grand Bank, off which anchorage may be obtained in 10 fathoms water, is on Bouilli Point, one mile SE. of the head.

Grand Bank Head appears from the northward and eastward as a flat-topped conical-shaped hill, which in thick weather is a good landmark.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls fortnightly during summer and autumn.

Light.—From a beacon, 23 feet in height, painted red and white in horizontal bands, situated 100 yards S. 83° W. (N. 70° W. mag.) from the extreme of the breakwater at Grand Bank, a fixed red light is exhibited at an elevation of 28 feet, which should be visible 5 miles, between the bearings S. 63° E. (S. 36° E. mag.), through south, to S. 61° W. (S. 88° W. mag.).

Water.—Water can be obtained by sending a boat up Grand Bank Brook at high water.

Ice.—Field ice appears at the end of February and leaves early in April; vessels arrive during the first week in March and leave toward the latter end of December; this harbor has only been frozen over twice (in 1875-76) in the last 30 years.

Tides.—It is high water, full and change, in Grand Bank at 8h. 48m.; springs rise $6\frac{1}{2}$ feet, neaps $5\frac{1}{2}$ feet.

Coast.—Grand Beach Point, nearly 11 miles eastward of Grand Bank Head, is a low projection covered with trees. Scott Rock, with $4\frac{1}{2}$ fathoms water over it, lies 1,300 yards N. 51° W. (N. 24° W. mag.) from the point.

Grand Beach is at the head of a cove, eastward of the point. This place is much frequented by vessels of the herring fishery during the spring season.

White Point, $3\frac{1}{2}$ miles farther northeastward, is composed of bare granite; the coast from this northeastward, for 5 miles, is fronted by rocks, known as Garnish Rocks, extending nearly 2 miles offshore, and having no safe passage between them and the land.

Caution.—The fishermen of this locality are not trustworthy pilots except for the pass to Frenchman Cove.

Frenchman Cove, situated $3\frac{1}{4}$ miles northeastward of White Point, affords fair anchorage, for small vessels, in 4 or 5 fathoms water.

Tides.—It is high water, full and change, in Frenchman Cove at 8h. 47m.; springs rise 7 feet, neaps $5\frac{1}{2}$ feet.

Garnish, a small boat harbor, $1\frac{1}{4}$ miles northeastward of Frenchman Cove, has a considerable settlement and a church.

Light.—From a square tower, 33 feet in height, painted red and white, at the entrance to Garnish, a fixed red light is exhibited, at an elevation of 20 feet. This light is only intended for the fishing craft of the locality, and is rarely seen beyond a distance of 3 miles.

Coast.—Rosée Point terminates in some remarkable conical hills $9\frac{1}{4}$ miles northward of Garnish; some rocks lie off the intervening coast, the principal being Charley and Tilt Rocks, with depths of 13, ~~and~~ less than 6 feet, over them, respectively; they are more than $\frac{1}{2}$ mile offshore, and Hay Shoals are nearly one mile off Scott Point. The coast NE. of Rosée Point consists of bold rocky cliffs.

Grand Jervey Cove, $7\frac{1}{4}$ miles NE. of Rosée Point, has exposed anchorage in 14 fathoms water.

Langue de Cerf Cove, 8 miles eastward of Grand Jervey, affords anchorage in 16 fathoms water, with shelter from all winds except those between WSW. and North.

Jack Fountain Cove, 2 miles NE. of Langue de Cerf Point, has a small village surrounding it, and there is anchorage for small vessels in 7 fathoms water, but Jack Fountain Rock lies in the middle of the cove.

Bay l'Argent, and Bay l'Argent Back Cove, the former with a few houses round it, are situated respectively on the east and west side of a peninsula just NE. of Jack Fountain Cove, and afford no anchorage for ships, but small craft find shelter in them close to the shore.

East Bay lies north of Bay l'Argent, and may be recognized by Boat Rock, an island 2 feet high, resembling a boat under sail, lying in the entrance.

A mile inside of Boat Rock the bay divides into two arms, one extending one mile east, and the other 2 miles NE. Little Harbor, of small extent, is on the north side of the NE. arm $\frac{1}{4}$ mile from the head, and Lower Little Bay, encumbered with shoals, is at the head of the eastern arm. Anchorage may be had at the head of either arm of East Bay.

Mille Harbor is a small cove one mile north of East Bay entrance, affording good shelter for small vessels.

Cape Mille is a high, red, barren, rocky point, 7 miles from the head of Fortune Bay. The width of the bay at this cape is $1\frac{1}{4}$ miles, but opens out to double that breadth immediately west of the cape.

The coast east of this on both sides is high, with steep cliffs, and at the head of Fortune Bay the shore is steep-to and free from danger; there is a large settlement, off which anchorage may be obtained in from 7 to 9 fathoms.

Grand le Pierre Harbor, on the north side of the bay, 2 miles from the head, is a good harbor, with anchorage in 4 to 8 fathoms, and no danger in the approach.

Tides.—It is high water, full and change, in Grand le Pierre Harbor at 9h. 10m.; springs rise 7 feet, neaps 5 feet.

English Harbor, with good anchorage in from 4 to 10 fathoms water, and sheltered from all but southerly winds, is situated $4\frac{1}{4}$ miles SW. of Grand le Pierre; rocks lie close off the entrance points, otherwise the harbor is clear. There are two inner harbors, which can be entered by small craft at high water, and a small village is at the head.

Little Bay de l'Eau, about $1\frac{1}{4}$ miles SW. of English Harbor, has some islets and rocks off it. The entrance is only 200 yards wide, but the harbor expands near the head, and has anchorage in 21 fathoms water.

New Harbor, 2 miles SW. of Little Bay de l'Eau, affords sheltered anchorage to fishing craft in 12 feet water.

Femme Harbor, formerly known as Story or Le Conte Harbor, is 3 miles westward of Little Bay de l'Eau.

At the entrance of the harbor are two large and several small islets, the largest and southernmost named Petticoat Island, and the other large one Smock Island.

Femme Shoal, on which the least water is $4\frac{1}{4}$ fathoms, extends $\frac{1}{2}$ mile WSW. from the SW. point of Petticoat Island.

Directions.—The best passage is west of Petticoat Island, and between it and Smock Island. As soon as the harbor begins to open, keep nearer Smock Island to avoid sunken rocks extending from the NE. point of Petticoat Island and Drew Rock, which dries 3 feet, off the east side of the harbor. When these dangers are passed, keep mid-channel till near the narrows at the head, when a buoy should be placed on the east side of Druid Rock, and the vessel steered midway between the buoy and the east shore into a fine basin with anchorage in from 6 to 16 fathoms water, over sand and mud.

Tides.—It is high water, full and change, in Femme Harbor at 8h. 35m.; springs rise 7 feet, neaps 5 feet; neaps range 4 feet (approximate).

Big Conne, an exposed bay 2 miles west of Femme Harbor, has anchorage in from 9 to 17 fathoms water at the head. Little Conne is a cove on the west shore, suitable for fishing craft; there are a few houses on its south shore.

Long Harbor, $4\frac{1}{2}$ miles west of Femme Harbor, may be recognized by Gull Island at the entrance, and Black Rock, 6 feet high, $\frac{1}{2}$ mile south of the island. The harbor extends 14 miles NNE., with an average breadth of $\frac{3}{4}$ mile, and has several anchorages. Rocks which cover at high water lie in the passage east of Gull Island, considerably more than 400 yards from shore, and greatly contract that channel. If entering by the eastern passage, a vessel should approach to Gull Island.

The western entrance is safer, and by keeping near the western side the sunken danger in mid-channel will be avoided.

At 3 miles within the entrance are the narrows, in which is a depth of $6\frac{1}{2}$ fathoms. The dangerous part of Long Harbor is just above Indian Tea Island, where the channel is only 300 yards wide between two sunken rocks with 2 feet and 5 feet water over them, respectively.

Telegraph.—There is a telegraph station at the head of the harbor, 2 miles southward of Otter Point; also a river frequented by salmon and sea trout.

Anchorage.—Captain R. W. Meade, U. S. N., found a number of excellent anchorages in Long Harbor.

One good anchorage, much resorted to by the fishermen, is Woody Island anchorage, near Tickle Point. This anchorage is out of the strength of the tide, is $4\frac{1}{2}$ miles from the entrance to Long Harbor, and has a moderate depth of water and good holding ground.

Inside of Woody Island there is a fine basin for small vessels, which can go up to the wharf constructed there.

Above Tickle Point there is another good anchorage, also out of the tide, with moderate depth of water and perfect shelter.

The local fishermen report that there are several other anchorages in Witch Hazel Bay, near the head of the harbor.

The U. S. S. *Vandalia* anchored off Woody Island, near Tickle Point, in 7 fathoms water, with Tickle Point bearing N. 28° E. (N. 56° E. mag.), and the center of Woody Island S. 53° E. (S. 25° E. mag.).

Tides.—It is high water, full and change, in Long Harbor at 8h. 50m.; springs rise 7 feet, neaps $5\frac{1}{2}$ feet.

Tidal Streams.—The tidal stream runs past Tickle Point with considerable strength, probably at times attaining a velocity of 3 knots an hour.

Off Woody Island the greatest velocity of the ebb stream was observed to be $1\frac{1}{2}$ knots an hour, and that of the flood $\frac{1}{2}$ knot.

At Schooner Cove it was observed to be high water, full and change, at about 9h.; the ebb stream ran with sufficient strength to keep a vessel broadside on to a strong breeze.

Coast.—From Long Harbor Point the south point of Chapel Island bears S. 73° W. (N. 79° W. mag.), distant 10 miles; between these points is the entrance to Belle Bay, containing numerous islets and islands.

Hare Harbor lies NNW. of Long Harbor Point, east of some islets, and is only suitable for fishing craft.

White Rock, with $3\frac{1}{2}$ fathoms water over it, lies 700 yards S. 62° W. (West mag.) of the southern islet.

Mal Bay, 2 miles NNW. of Hare Harbor, extends in a NNE. direction 5 miles, and has anchorage near the head, where the bay is narrow; caution must be observed when anchoring, for the water shoals suddenly from 23 to $5\frac{1}{2}$ fathoms.

Rencontre Islands are NW. of Mal Bay; the largest, 464 feet high, is joined to the mainland at low water.

Southern Harbor stretches into the south part of this island, but it is narrow and exposed to southerly winds.

Anchorage may be obtained east of the isthmus joining the large island to the mainland, off the village of Salmonier, sheltered by the two smaller islands east of it, and should be entered by keeping mid-channel between the islands and the mainland.

A rocky ledge, with a depth of 3 fathoms on it, extends some distance off the settlement; and there is a small rock, with 4 feet water over it, about 200 yards offshore.

Isle à Glu lies midway between Rencontre Islands and the entrance to Belle Harbor.

Belle Harbor, a narrow arm of the sea $3\frac{1}{2}$ miles WNW. of Rencontre Islands, is entered west of Doctor Island, which shelters Doctor Cove on the east shore, where small craft can anchor. Anchorage can be obtained in Belle Harbor in from 8 to 17 fathoms water, but the head of the harbor should be approached with caution, as the water shoals suddenly.

The north shore of the anchorage at the head of the harbor consists of a peninsula, having two rises of land on it; the eastern of these is a remarkable black cliff, and vessels should not proceed eastward of it.

Lallyhead, $2\frac{1}{2}$ miles from the entrance to Belle Harbor, is the extremity of a long promontory that, with Lally Cove Island, form Lally Cove and Lally Back Cove. Both these coves are only suitable for boats, but vessels may find temporary anchorage off the latter in from 14 to 16 fathoms water.

East Bay, wide and open, and entered $1\frac{1}{2}$ miles north of Lally Back Cove, is separated from North Bay, which forms the head of Belle Bay, by East Bay Head. There is good anchorage off the mouths of the brooks emptying into both East and North Bays, and at the head of the latter is a large river frequented by salmon; north of the river there is good ground for deer.

Cinq Isles Bay, south of North Bay, and so named from five islands lying in it, is square in shape, and divided near the center by a line of small islands which extend $1\frac{1}{2}$ miles in a northeasterly direction from the western shore; on its north side is a small inlet, named Simmons Brook, in which small vessels may anchor; there is an island in the inlet, and at the head is Salmon River. Anchorage, with fair shelter, may be obtained for large vessels at the west side of the bay, but care should be taken to avoid a shoal lying $\frac{1}{2}$ mile from the river mouth, at the SW. corner of the bay.

Coal.—A small supply of coal (about 20 tons) may be obtained at Salmon River.

(B. A. Chart No. 687.)

Corbin Head, forming the south side of Cinq Isles Bay, and the north of Corbin Bay, is steep and bold to the eastward; between this head and Lally Head, on the opposite side, Belle Bay is $1\frac{1}{2}$ miles wide.

Corbin Bay, south of Corbin Head, is divided into two branches, named Northwest and Southwest Arms, both affording anchorage in 7 fathoms water; Bob Head is the east point of Corbin Bay.

White Rock, with 19 feet water over it, lies $\frac{1}{2}$ mile north of Bob Head.

Ducie Rock, a dangerous reef awash at low water, lies 1,300 yards N. 73° E. (S. 79° E. mag.) from Bob Head; a shoal, with 2 fathoms water over it, lies about 100 yards northward, and a shoal on which the depth is $2\frac{1}{2}$ fathoms, 200 yards westward of the rock. These dangers lie on a bank about $\frac{1}{2}$ mile long, with depths of from 4 to 9 fathoms on it.

Lord and Lady Island, 75 feet high, lies $\frac{1}{2}$ mile eastward of Bob Head, and Thrum Cap, a small steep island, 87 feet high, lies off the east side of this island.

Dog and Belle Islands lie at equal distances between Lord and Lady Island and the entrance to Belle Harbor; Dog Island is 202 and Belle Island 293 feet high. Dog Island Bank comprises three dangerous rocks, the shoalest, with 9 feet water on it, lies S. 62° E. (S. 34° E. mag.), distant $1\frac{1}{2}$ miles from the south extreme of Dog Island.

Long Island, $1\frac{1}{2}$ miles long and 375 feet high, is separated from Lord and Lady Island by a channel $\frac{1}{2}$ mile wide. Tickle Island lies on a bank extending from the NE. side of Long Island, and Barrow Rock, 15 feet high, lies in the center of the channel.

Chapel Island, nearly 3 miles long and about $1\frac{1}{2}$ miles broad, is 843 feet high; it is bold-to on all sides but the north, and is $\frac{1}{2}$ mile south of Long Island, the channel between being foul. **Farmers Cove**, at the NE. extreme, affords anchorage for small craft in 5 fathoms water.

Belloram, or Bande de l'Arier Harbor, on the mainland west of Chapel Island, may be recognized by Iron Head, a high bluff, rising almost perpendicularly from the sea, $\frac{1}{4}$ mile NNE. of the harbor. On the east side is a semicircular beach that forms a snug harbor for small vessels, with 5 fathoms water in it, and large vessels may find shelter north of the entrance in from 14 to 18 fathoms; a large settlement surrounds the harbor.

Light.—On Beach Point a tower, 37 feet in height and painted white, exhibits, at an elevation of 35 feet, a fixed white light, which should be visible 7 miles.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls here fortnightly during summer and autumn.

Tides.—It is high water, full and change, in Belloram Harbor at 8h. 59m.; springs rise 6 feet.

St. Jacques Island, 163 feet in height, consisting of two hummocks joined by a low neck, is 3 miles south of Belloram, and may be approached within a short distance all round.

St. Jacques Harbor, entered $\frac{1}{2}$ mile west of the island, is free from danger, except a small shoal spit off the east point.

Anchorage.—Anchorage may be obtained, with good shelter, in from 4 to 17 fathoms water, but vessels anchoring in the north part of this harbor should not proceed within a depth of 9 fathoms, as in shoaler water the bottom is rocky with kelp.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls at St. Jacques fortnightly during summer and autumn.

Water.—A settlement surrounds the harbor; water and wood can be obtained here, but no provisions.

Blue Pinion Harbor, $1\frac{1}{4}$ miles west of St. Jacques Harbor, is one mile long and 700 yards broad; off the west side, near the head, a shoal stretches out 300 yards.

Anchorage may be obtained at the head, in from 5 to 15 fathoms water, nearer the east shore to avoid this shoal, but the harbor is exposed to southerly winds.

There was no settlement in this harbor in 1883.

English Harbor, one mile SW. of Blue Pinion Harbor, is surrounded by a settlement having two churches, and is adapted to small craft only.

Great Mon Jambe (Great Mose Ambrose), nearly one mile west of English Harbor, is very confined, and affords anchorage

for small craft in 5 fathoms water. Little Mon Jambe, next west of it, is exposed to southerly winds.

Boxey Harbor, $3\frac{1}{2}$ miles WSW. of Blue Pinion Harbor, is small and barred by a shoal with 3 fathoms water over it, but when inside, anchorage may be obtained in $4\frac{1}{2}$ fathoms water, over fine sand. The best channel in will be found by keeping the mound on Boxey Point in line with Friars Head, bearing about S. 25° W. (S. 53° W. mag.). A few houses and a lobster factory stand on the north shore.

Tides.—It is high water, full and change, in Boxey Harbor at 8h. 43m.; springs rise $6\frac{1}{2}$ feet.

Boxey Point, a promontory nearly 3 miles long, of moderate height, can be recognized from a considerable distance. Sunken rocks lie off the extremes of the point, which should not be approached within $\frac{1}{2}$ mile.

Boxey Rock, with 3 feet water over it, lies 735 yards S. 30° W. (S. 58° W. mag.) from Boxey Point; the houses on the north side of Boxey Harbor, seen open of Friars Head, bearing N. 16° E. (N. 44° E. mag.), lead east; and the SW. extreme of St. John Island, open of Shepherd Rock, N. 77° W. (N. 49° W. mag.) leads south of the rock.

No vessels should pass between the rock and the mainland, as a sunken danger, which breaks with a moderate sea, lies about 300 yards from the point NW. of the rock.

St. John Island, at the entrance to the bay of the same name, is 380 feet in height and has a shoal with a depth of $2\frac{1}{2}$ fathoms lying $\frac{1}{2}$ mile south of it; and Kippins Shoal, on which the least water is $6\frac{1}{2}$ fathoms, is situated nearly 800 yards SE. of the island.

St. John Head, high and cliffy, and forming the east point of Great Bay de l'Eau, is a promontory 3 miles NW. from the extreme of Boxey Point Promontory. Between them is St. John Bay, having moderate depths for anchoring with offshore winds, the best anchorage being in the northern part, where the bay narrows to a boat harbor. On the NW. side of St. John Head are Gull and Shag Rocks, the latter 51 feet high and situated $\frac{1}{2}$ mile from the shore. West and south of these rocks are some sunken dangers, and within the 100-fathom line, which runs parallel to and about $1\frac{1}{2}$ miles to the westward of the promontory, are several shoals, the positions of which will be best seen from the chart.

Great Bay de l'Eau extends 10 miles northeastward from St. John Head and terminates in Old Bay, having no good anchorage except near the head. Devils Island lies nearly 5 miles within St. John Head, forming two channels, the western of which is barred by a bank with 6 feet water over it; the east channel is clear.

Anchorage may be obtained north of Little Devils Island in 11 fathoms, or farther SW. in 6 fathoms water.

Little Bay, $3\frac{1}{4}$ miles NNW. from St. John Head, has anchorage on its west side in from 7 to 10 fathoms water. A rock lies off the west point of the entrance, and the head branches in two arms.

Water.—There is a settlement at Riverhead, in the NW. part of the bay, and water and wood may easily be obtained here.

Harbor Breton, immediately west of Eastern Head, extends in a northerly direction for 9 miles, with two arms on opposite shores, 2 miles within the entrance.

Northeast Arm is bordered by steep cliffs, and has no anchorage, except for small vessels, in 8 fathoms water, west of the narrows.

Southwest Arm, or Harbor Breton proper, extends 1,300 yards SW. to a bar of 12 feet water, then trends NE. in a shallow arm named the Barasway, where small vessels lie in perfect safety. Here is the largest settlement in Fortune Bay.

Light.—On Rocky Point is a cylindrical iron tower, 20 feet in height and painted red and white in horizontal bands, from which is exhibited, at an elevation of 68 feet, a fixed white light, which should be visible 9 miles. The light is obscured in the direction of Harbor Rock.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls here fortnightly during summer and autumn, and there is a telegraph station at the settlement.

Harbor Rock, with $2\frac{1}{4}$ fathoms water on it, lies 200 yards N. 28° E. (N. 56° E. mag.) from Thompson Beach.

Buoy.—A warping buoy, painted red, is moored about 100 yards northward of Harbor Rock.

Anchorage.—Small vessels may anchor in any part of the arm eastward of the bar, but large vessels must anchor in 17 fathoms water NE. of Harbor Rock buoy, giving plenty of cable to secure the vessel against dragging with the heavy squalls that sweep this anchorage with strong breezes, even in summer.

This harbor will not hold many large vessels, as the water is deep immediately the mouth of Southwest Arm is passed to the eastward.

Buoys.—Two mooring buoys, painted red, are laid down in Harbor Breton at about 30 yards from the pier heads of the wharf on Thompson Beach. The eastern buoy is in 9 fathoms water, and the western in 3 fathoms.

Directions.—A small vessel, when entering Harbor Breton, should pass north of the red warping buoy moored northward of Harbor Rock, and anchor in 10 fathoms water, over mud and gravel, in the center of the harbor midway between the red buoys

off Thompson Beach and the north shore, with two storehouses on the southern shore (long, wooden, whitewashed buildings, with black roofs) end on, bearing about S. 28° E. (South mag.).

Jerseyman Harbor, the eastern arm, may be easily recognized by Jerseyman Head, a remarkable red-cliffed promontory that forms the north side of the harbor. This inlet has excellent anchorage for small vessels in a depth of 7 fathoms, but the entrance is barred by a shoal with 19 feet on it at low water.

The principal settlement is on the NW. shore, where there is a wharf. It is shoal alongside the wharf, but at a few feet distant there is a depth of 5 fathoms. A lobster factory is situated on the east shore.

Ice.—Harbor Breton is closed at intervals by field ice, but during a period of thirty years the harbor has only been unavailable to the fortnightly mail steamer on three occasions. The field ice appears toward the latter end of February and leaves about 25th March, the first vessels arriving at the end of April and the last leaving about the middle of December. The outer anchorage freezes over about the New Year, and harbor ice disappears about the middle of April.

Tides.—It is high water, full and change, in Harbor Breton at 8h. 52m.; springs rise 7 feet, neaps 5½ feet; neaps range 4 feet.

(H. O. Chart No. 1108, and B. A. Chart No. 898.)

Coast.—West of Harbor Breton the coast is foul and rocky, forming a bay named Deadman Bight, from the shore of which a bank stretches more than 2 miles, on portions of which the sea breaks in gales.

Offer Rock, with 12 feet water on it, is the southernmost of a group of rocks, and lies 1,700 yards S. 34° W. (S. 62° W. mag.) from Gull Island.

Connaigre Head, clifty and bold, and 310 feet high, is a long promontory forming the east side of Connaigre Bay.

Connaigre Rock, with 1½ fathoms water over it, lies 3 miles S. 25° W. (S. 53° W. mag.) from the SE. extreme of Connaigre Head.

Connaigre Bay extends 14 miles in a northeasterly direction, and contains several islets and inlets. In the middle of the mouth of the bay are Shag Rocks, 24 feet high. The channel between them and Connaigre Head is the safer, as a ledge of rocks extends one mile from the north shore. Black Rock, one foot above high water, lies ¼ mile southwestward of Shag Rocks.

Great Harbor, 5 miles NE. of Connaigre Head, and on the east side of the bay, is partly formed by Will Island, 310 feet high, which lies near the north side, with no passage between it and the

mainland. To enter, pass SE. of this island, and keep near the eastern shore of the harbor.

Great and Little Islands, 483 and 270 feet high, respectively, are NW. of the harbor in the middle of the bay, and some rocks lie south of these islands.

Great Harbor Bight is free from dangers; there is anchorage, in 10 fathoms water, at 400 yards from the head, but it is entirely exposed to westerly winds.

Small vessels may anchor, in from 4 to 14 fathoms water, in Salmonier, at the head of the bay, but eastward of Great Island there is no other anchorage except for boats.

Dawson Cove, about 5 miles north of Connaigre Head, is on the west side of the bay, and anchorage may be obtained in 6 fathoms water, but quite exposed to southerly winds.

Dog Cove Head marks the southern approach to this cove, and the shore west of the head is bordered by bowlders. Rocks and shoal water extend 1,700 yards southward from the Bight, an exposed bay $3\frac{1}{2}$ miles westward of the head.

Basse-terre Point, the western point of Connaigre Bay, lying 8 miles W. by N. from Connaigre Head, is bare, and the coast westward to Beck Bay is foul; a confused sea is raised by South Red Head Shoal, extending $\frac{1}{2}$ mile from Red Point, $1\frac{1}{2}$ miles to the northwestward of Basse-terre Point.

Pass Island, the dividing point of Fortune and Hermitage Bays, is about one mile long, and separated from the mainland by Pass Island Tickle, 265 yards wide, with 4 fathoms water. Off the west side of Pass Island a group of islets and shoals extend one mile, and Tom Cod Rock, that breaks, lies about $\frac{1}{2}$ mile north of it.

Lights.—On the summit of Pass Island, near its SW. extreme, a fixed white light is exhibited from a lantern on the flat roof of a wooden dwelling, 33 feet in height and painted white; the light is elevated 281 feet, and should be visible 19 miles.

A fixed red light is shown from the corner of a dwelling, at an elevation of 267 feet above high water, visible between the bearings N. 76° E. (S. 76° E. mag.) and N. 60° W. (N. 32° W. mag.), over an arc of 136° , covering the area included between the shoal ground off Wolf Rocks and Basse-terre Point; the two lights appear as one at the distance of $4\frac{1}{2}$ miles.

Anchorage.—There is a fairly large settlement on Pass Island, and anchorage for small vessels may be obtained in $6\frac{1}{2}$ fathoms water, over sand, in Pass Island Tickle, off the houses in the middle of the island, but there is no shelter from southerly winds.

Hermitage Bay extends in an easterly direction nearly 25 miles, and contains several anchorages. Grole Western Cove,

about 3 miles east of Pass Island, is the westernmost of these, and affords anchorage in 9 fathoms water. Grole Cove is suitable for boats only, and may be recognized by the settlement around it.

Fox Islands consist of Fox Island, 210 feet high, and Little Fox Island, 89 feet high, with Fox Island Rock, 26 feet high, between them, and are situated $\frac{1}{4}$ mile from the south shore, 10 miles ENE. of Pass Island. Several rocks lie off the north side of the western and larger island, and Virgin Rock is situated off the south side. A reef extends 250 yards westward from Little Fox Island. Beyond these islands Hermitage Bay narrows to one mile in width.

Hermitage Cove, SE. of Fox Islands, is $\frac{1}{4}$ mile deep, nearly 800 yards broad, and affords good anchorage in 8 fathoms water, at 800 yards from the head. A settlement, having a stone church, surrounds the cove. The squalls are heavy here, and great care is necessary in boat-sailing.

Anchorage.—Northeastward of Hermitage Cove there are many anchorages available for small craft, among which may be mentioned Furby, Olive, Hardy, Salmonier, and Northwest Coves. Large vessels will find good anchorage at the head of Hermitage Bay in 22 fathoms, and less water as convenient.

Ice.—The head of Hermitage Bay is generally frozen for from 5 to 8 miles, between the first week in January and the first week in April.

Tides.—It is high water, full and change, in Hermitage Cove at 8h. 45m.; springs rise 7 feet, neaps $4\frac{1}{2}$ feet.

Little Passage separates Long Island from the mainland. L'Anse à Flamme, branching into several small coves, is situated on the west side, $\frac{1}{4}$ mile from Margery Head, the SW. entrance point, and affords anchorage for small vessels, near the head, in 13 fathoms water. Little Passage, though narrow, is deep, and may be navigated in mid-channel, passing west of the two islands off L'Anse à Flamme.

At 3 miles from the south entrance is a small islet about 30 feet high, with a clear passage on either side of it. Half a mile further north is another islet, 20 feet high, separated from the east shore by a narrow shallow channel. The channel, which is here only 150 yards wide, must be taken by keeping the shore of Long Island aboard.

Maria Cove contains sunken rocks. Day Point must be kept shut in with the eastern shore, bearing N. 21° E. (N. 49° E. mag.), to avoid a rock off the point south of Cold Harbor, until the water-fall in Deer Cove bears S. 84° E. (S. 56° E. mag.), when a mid-channel course will lead to Despair Bay.

Long Island, separating Hermitage Bay from Despair Bay, is 819 feet high, barren and rugged, with many valleys; the shores are much indented, and contain several harbors available for small vessels.

Long Island Rock, 10 feet above water and bold-to, lies $\frac{1}{2}$ mile SW. from Western Head, the SW. point of Long Island.

Gaultois, the eastern harbor on the south side, is small, and has some islands in the middle of the entrance. Whale or Lamy Island, on which is a boiling-house for whale oil, is the northernmost of these islands, and should be kept open east of West Head, bearing N. 12° E. (N. 40° E. mag.) when entering, to avoid a rock with 3 feet water over it, lying 50 yards south of the head, after passing which keep West Head aboard.

Light.—A fixed white light, elevated 14 feet, is exhibited from an iron column, painted red, placed on a rock (awash at high water) off West Head.

A tramway, on which the light is run out, extends from a small store on West Head to the column. The light, kept on a N. 6° E. (N. 34° E. mag.) bearing, leads eastward of the sunken rock above mentioned, which lies about 100 yards S. 28° W. (S. 56° W. mag.) from the lighthouse.

Buoy.—There is a mooring buoy about 200 yards westward of Whale Island.

Anchorage.—Vessels may anchor in 24 fathoms water, taking care to avoid the heavy moorings laid from Whale Island to the opposite shore; or they may make fast to the buoy.

Ice.—Field ice arrives about the middle of February and leaves toward the end of March; Gaultois Harbor seldom freezes except during severe winters with calm weather, and the ice generally breaks up in a few days.

Tides.—It is high water (approximately), full and change, in Gaultois Harbor at 8h. 45m.; springs rise 7 feet, neaps 4 $\frac{1}{2}$ feet.

Picarre, 1 $\frac{1}{2}$ miles west of Gaultois, is 400 yards wide; on the eastern side of the entrance are Mad Moll, drying 2 feet; Crazy Betty, drying 1 $\frac{1}{2}$ feet; and a shoal, with 16 feet water over it, lying 300 yards west from Crow Nest, the east point of the entrance.

When entering, the western side must be kept aboard to avoid these shoals; the Narrows, at the head of the harbor, shut in with Buffet Point, $\frac{1}{2}$ mile inside the entrance on the west side, bearing N. 11° E. (N. 39° E. mag.), clears them, and anchorage may be obtained immediately within the entrance in from 11 to 13 fathoms water, or by small vessels, as convenient, as far as the Narrows.

Round Harbor, 2 $\frac{1}{2}$ miles westward of Picarre, has an entrance channel only 65 yards wide, and is only suitable for small vessels.

Little Bay and Sam Hitches Harbor, 2 miles west of Round Harbor, affords anchorage to small craft only.

Despair Bay, entered between Western and Great Jarvis Heads, both prominent bluffs, easily recognized from seaward, is divided into two arms, the eastern extending 22 miles and the northern 13 miles. Off the west point of the entrance are several islands and shoals, and the land in this neighborhood is hilly and barren, but at the head of the bay it becomes flat, and has abundance of wood.

Ice.—The head of Despair Bay generally freezes about the end of December, and clears about 20th April.

Big Shoal, with 16 feet water on it, lies about one mile east from the NW. extreme of Long Island, and 735 yards from the nearest shore. Saddle Island open west of Long Island, bearing S. 48° W. (S. 76° W. mag.), leads NW., and Harbor le Gallais Hill open north of Grip Island, bearing N. 85° E. (S. 67° E. mag.), leads north of this danger.

Grip Island, small, and 55 feet high, is connected with Long Island by a reef.

Patrick Harbor offers convenient anchorage for small vessels in 6 fathoms water. Over the west entrance point is a wooded cone, about 200 feet high, and close off it lies a sunken rock. The east entrance point is a small promontory 10 feet high, close off which are a rock that covers at high water and a sunken rock; there are no dangers in the harbor.

Patrick Harbor Rock uncovers 2 feet at low water, and lies $\frac{1}{2}$ mile N. 45° E. (N. 73° E. mag.) from the east entrance point of the harbor. Two sunken rocks lie westward of it, the western being distant 350 yards.

The summit of Great Jarvis Island open west of Long Island, bearing S. 69° W. (N. 83° W. mag.), leads north of these dangers.

Harbor le Gallais is eastward of Harbor le Gallais Hill, a wooded cone 280 feet high, immediately eastward of Patrick Harbor. It is only suitable for small vessels, being 150 yards wide, but has depths of from 4 to 6 fathoms.

A rock that covers lies close to, and sunken rocks are situated 265 yards respectively from the north entrance point.

Sloop Rock, a small bare islet 15 feet high, lies 1,200 yards northeastward of Harbor le Gallais, and Gull Rock, which uncovers 5 feet at low water, is situated $\frac{1}{2}$ mile southwestward of Sloop Rock. There are two shoals between these rocks.

Raymond Point, the NE. extreme of Long Island, terminates in a small cliff close eastward of a wooded hillock 99 feet high; a few houses stand between the several mounds that form the point.

Day Cove, one mile southward of Raymond Point, affords anchorage to small vessels off the entrance, in 10 fathoms water, but exposed to easterly winds.

Fox Island, northwestward of Raymond Point, is 370 feet high; a small islet, 6 feet high, lies close to the west extreme, and small rocks lie close to the shore in several places.

Dollond Bight, an exposed cove, 3 miles northeastward of Brimball Head, affords anchorage in from 13 to 20 fathoms water.

Taylor Island Rocks extend 100 yards from a small islet at the north point of Dollond Bight, but there are no other dangers.

Simmonds Barasway is immediately north of Dollond Bight, and shoals gradually from the depth of 15 fathoms in the entrance to the narrows at the head, where it dries at low water.

Anchorage may be obtained in 10 fathoms water, just inside the entrance, or for small vessels in less depths, as convenient.

Cape Mark is the extreme of a narrow wooded promontory, 157 to 197 feet in height.

Gull Cove, a small indentation at the NE. extreme of the promontory, affords anchorage for small craft in 7 fathoms water.

Barasway de Cerf lies eastward of Gull Cove, and is suitable for boats only. Sunken dangers extend $\frac{1}{2}$ mile north of the entrance to Barasway de Cerf.

Little River, a narrow arm of the sea expanding into a large basin at the head, and again contracting to an arm, that extends in a northeasterly direction, is suitable for small vessels only, as no greater depth than 13 feet can be carried in, and the tidal streams attain a velocity of 3 knots an hour.

The entrance is divided into two channels by a wooded islet 38 feet high, from which a reef extends eastward to about 50 yards from the south shore. The northern entrance is shallow, and has a rock that covers in the middle. The southern channel is practicable by keeping close to the shore till the reef is passed, when a mid-channel course will lead to the basin at the head.

Riches Island, 443 feet high, situated westward of the entrance to Little River, is nearly connected to the mainland, east of it, by islets and reefs.

Sunken rocks lie 250 yards off the SE. extreme, and Seal Rocks, that are awash at high water, lie 150 yards from the south shore.

Anchorage may be obtained off the entrance to Little River, in 14 fathoms, or, eastward of Riches Island, in 7 fathoms water, over mud, with good holding ground.

Dawson Passage is between Riches and Bois Islands. A shoal extends from the latter into the channel, at the east extreme of which is a rock with $3\frac{1}{2}$ fathoms water over it, at 250 yards from Riches Island. Vessels should therefore be kept close to Riches Island in passing through the channel.

Arran Cove, northeastward of Dawson Passage, is $1\frac{1}{2}$ miles deep. The south shore is foul for a short distance, but the north shore is

bold, with the exception of a rock quite close to the shore, in the first small bight from the entrance.

Crow Head, a conspicuous cliff 718 feet high, forms the north entrance point of Arran Cove.

Anchorage.—Anchorage may be obtained in 12 fathoms water, about midway up the cove, or in less depths as the head is approached.

Water.—Water may be procured from a stream falling into this bight.

Conne River, entered on the east side of the bay, at 4 miles from Crow Head, flows into a small bay through a channel only 200 yards wide. Eastward of these narrows the water is shallow and suitable only for vessels drawing less than 12 feet water, which can anchor immediately inside, as the greater portion of the arm to the eastward dries at low water.

A small settlement of Indians is situated immediately eastward of the narrows, and a church stands on the mound south of the narrows, but is hidden from the westward by trees.

Anchorage, with good holding ground, may be obtained in 6 fathoms or less water, as convenient, outside the river, but vessels should proceed slowly, and soundings should be carefully watched, when taking up their berths.

Ship Cove, on the west side of Despair Bay, is immediately opposite to Conne River.

Birchy Point is the east extreme of a small projection, surmounted by a mound 55 feet high, on the west side of which is a small settlement and a church. The cove is dry, at low water, northward of Birchy Point.

Anchorage.—Anchorage may be obtained in the middle of Ship Cove, in 7 fathoms water.

Water.—Water can always be procured from Big Rattling Brook, a large stream $\frac{1}{2}$ mile southward of Frenchman Head, and a small supply of beef may generally be obtained, and vegetables in summer.

Tides.—It is high water, full and change, in Ship Cove at 8h. 36m.; springs rise $7\frac{1}{4}$, neaps rise $5\frac{1}{2}$ feet; neaps range $3\frac{1}{2}$ feet.

A slight stream runs through the narrows of Despair Bay and Conne River, but rarely attains the velocity of one knot an hour.

Head of Despair Bay.—Northward of Ship Cove, Despair Bay narrows to the breadth of $\frac{1}{4}$ mile, and is free from danger, except off Clark Cove, the first bight eastward of the narrows, where a bank, with less than 3 fathoms water over it, extends to the line of the points.

A rock that uncovers at low water also lies close to the east shore, $\frac{1}{4}$ mile NE. of the narrows.

Swagger Cove, on the west shore, is immediately NW. of the narrows, and dries to the mouth at low water.

Anchorage.—Anchorage, in 5 fathoms water, may be obtained on a bank extending eastward from the cove.

Weasel Island consists of two rocks, the higher 5 feet above high water, joined together and to the east shore of the bay, from which they are 100 yards distant at low water.

Several conspicuous houses, painted white, stand on a spit immediately west of this islet, from which shoal water extends 200 yards, to the depth of 3 fathoms. North of Weasel Island there is a good salmon and sea trout river, and deer may be obtained in the vicinity.

Telegraph Station.—In connection with the Anglo-American Company, there is a telegraph station situated $1\frac{1}{4}$ miles eastward from Weasel Island.

Landing.—Deepwater Point, northward of the station, and just south of the southernmost garden visible, is the only landing place at low water for the station, as the bay dries $\frac{1}{2}$ mile from the mouth of Southeast Brook, a considerable stream, that discharges its waters close south of the station.

Anchorage.—The western limit of the anchorage at the head of Despair Bay is with the east entrance point of Cock and Hen Cove bearing N. 28° W. (North mag.), in $5\frac{1}{2}$ fathoms water, with 20 fathoms close to westward. From this the depths decrease gradually, the deepest water being found nearer the west shore.

Bois Island, dividing the eastern arm of Despair Bay into two channels, is 8 miles long, and 2 miles wide at its broadest part, and surmounted by a barren hill, 664 feet high, over the middle of the north shore.

Flobber Cove Island, 15 feet above high water, lies close off the middle of the east shore, and two rocks, that cover at high water, lie eastward of that islet, the eastern being 100 yards distant.

May Cove, north of May Head, the east point of Bois Island, affords anchorage in $7\frac{1}{2}$ fathoms water, and is free from danger, except at the head, which dries at low water.

A shoal, with $3\frac{1}{2}$ fathoms water on it, lies 300 yards N. 85° E. (S. 67° E. mag.) from May Head.

Snooks Harbor, in the middle of the south shore, is encumbered with rocks, and suitable for boats only.

Big Copper Head, the SW. extreme of Bois Island, is formed of a reddish yellow cliff, 340 feet high. Close westward of it is a cove with a shingle beach, and off the cove is a rock, that covers at high water, nearly 200 yards distant from the shore.

Roti Bay, entered NW. of Riches Island, extends in a north-westerly direction $1\frac{1}{4}$ miles, and is thence continued westward in an arm $\frac{1}{2}$ mile in length.

A rock, that uncovers 2 feet at low water, lies nearly in mid-channel, $\frac{1}{4}$ mile NNW. from the entrance, and is joined by a bar, with 6 fathoms water over it, to the eastern shore.

There is no convenient passage westward, but Riches Island completely open east of the west entrance point, bearing S. 36° E. (S. 8° E. mag.), will lead east of the rock.

Shoal water extends 150 yards from the south point of the arm at the head, and also a short distance from the east shore, leaving a passage only 150 yards wide, with a depth of 4 fathoms, to that arm.

Anchorage.—Anchorage may be obtained in from 14 to 17 fathoms water, at $\frac{1}{4}$ mile within the entrance, or north of the rock, in the same depths.

Water.—Water may be procured from the streams in the western arm or from Stickland Cove, the bight westward of the rock in the bay.

Lampidoes Passage, the channel north of Bois Island, has deep water throughout. The north shore falls precipitously in high cliffs, and is indented by one large and several small coves.

During NW. and SE. winds terrific squalls sweep through this passage, and vessels should then avoid it.

A rock, with 5 feet water on it, lies 100 yards from the shore, immediately within the SW. point of entrance to Lampidoes Passage, and is the only danger on that shore.

Margery Cove lies eastward of Margery Head, a steep cliff 500 feet high, and is formed by a small projection 38 feet high.

Northwest Cove, on the north shore near the middle of the passage, extends northeastward $\frac{1}{4}$ mile.

Anchorage.—Anchorage for small vessels may be obtained at the head in 7 fathoms water, over mud.

Pomley Cove, 2 miles SW. of Northwest Cove, has anchorage for small vessels only, in $6\frac{1}{4}$ fathoms water, at 150 yards from the shore. The head of the cove dries at low water.

Goblin Head, probably so named from the profile of a face seen on certain bearings, is a steep bluff surmounted by a round hill 648 feet high. It forms the south entrance point to Goblin Bay, an indentation nearly 2 miles in length, that contains deep water throughout, and no anchorage. Two small islets, 10 feet high, with rocks between, lie close to the south shore of the bay, near the head.

Middle Goblin Bay is separated from Goblin Bay by a round hill 520 feet high. A round rock and a square islet, both 11 feet above high water, lie southward of the entrance, and a rock, that covers at high water, lies 50 yards southeastward of the round rock.

This bay is useless for large vessels, as a rock, with 6 feet water on it, lies in the middle of the narrows, but small craft can pass on

either side of the rock in 3 fathoms water, and anchor at the head in 10 fathoms, or less, as convenient.

Little Goblin Bay, northwestward of Middle Goblin Bay, being encumbered with rocks, is suitable for boats only.

Raymond Island, 265 feet high, is separated from the mainland by Raymond Passage, a channel 100 yards wide.

East Bay, a little more than 6 miles in length, contains deep water till the bay branches into two arms. A small islet, 15 feet high, is joined at low water to the south shore of the eastern arm, and a few rocks lie close west of that islet.

Anchorage.—Anchorage may be obtained in $7\frac{1}{2}$ fathoms water, north of the islet, or in less depths for small vessels as convenient, the water shoaling gradually to the head.

Northwest Cove, the northern arm, contains deep water, and is unfit for anchorage except in small vessels, which will find 7 fathoms water at 200 yards from the head.

Stone Point divides East Bay from North Bay, and is the termination of a small conical hill, 102 feet high, under other round hills west of it.

North Bay extends inland $7\frac{1}{2}$ miles, and is entirely free from danger till near the head. The sides are bold, in many places precipitous, and the water is deep. Anchorage can be obtained only in the localities designated.

Anchorage.—First Brook, a small indentation on the east shore, $1\frac{1}{2}$ miles from the entrance, affords anchorage, for small vessels only, in from 7 to 11 fathoms water.

Second Brook Cove, one mile further east, has no anchorage.

Telegraph Station.—Near the head of the bay a telegraph station, in connection with the Anglo-American Company, stands on a low point, at a little more than $\frac{1}{2}$ mile from Indian Point.

Anchorage may be obtained in $6\frac{1}{2}$ fathoms water, from $\frac{1}{2}$ mile southward of Indian Point, in mid-channel, to abreast that point, in $4\frac{1}{2}$ fathoms water. The bank falls rapidly southward from a depth of $6\frac{1}{2}$ to 41 fathoms.

Small vessels can proceed as far as Dogberry Rock, a small islet 4 feet high, joined to the east shore; there is a good salmon and sea trout river at the head of the bay, and deer may be obtained in the vicinity.

Water.—Water may be obtained from several brooks flowing into the bay on each side, near the head. A large stream flows into the head, west of the telegraph station, but it is completely obstructed by bowlders at low water.

North Bay Head, the west entrance point, falls in cliffs from an elevation of 600 feet, the termination of a hill 1,040 feet high, close west of it. There is a conspicuous white mark on the west side of this head.

Cul-de-sac lies close south of North Bay Head, and is a small basin, containing anchorage for small vessels, in from 4 to 6 fathoms water, but the entrance is only 80 yards wide, and has a depth of 3 fathoms in it.

Sugarloaf Island, surmounted by a conical hill 264 feet high, is situated close southward of Cul-de-sac.

There is a passage, for boats only, between it and the mainland north. A rock, with 6 feet water on it, lies close to the W. extreme.

Great Cuiller Bay, entered south of Sugarloaf Island, extends 1½ miles inland, narrowing gradually to the head.

A rock, awash at high water, lies in Great Cuiller Bay at 1,150 yards westward of Sugarloaf Island, and a sunken rock lies 100 yards eastward of it. The passages, both north and south of these rocks, are clear; that to the southward is, however, less than 100 yards wide, while the northern is 250 yards broad. Stone Point kept in line with the passage north of Sugarloaf Island, bearing N. 65° E. (S. 87° E. mag.), leads north of these rocks.

Anchorage.—Anchorage, in depths of from 7 to 10 fathoms, may be obtained westward of the rocks, with good holding ground, but the water is deep east of them.

Great Cuiller Point lies south of the entrance. A remarkable white patch, that from a distance resembles a church with a spire, is situated 300 yards southward of the extreme.

Tides.—It is high water, full and change, in Great Cuiller Bay at 8h. 55m.; springs rise 6½ feet, neaps rise 5 feet; neaps range 3 feet.

Little Cuiller Bay, south of Great Cuiller Bay, is free from danger, except at the head, which dries to the narrows.

Anchorage.—Anchorage for small vessels may be obtained in from 8½ to 10 fathoms water, but exposed to easterly winds.

Birchy Cove lies south of Little Cuiller Bay. The shores are foul for a short distance, and shoal water extends 200 yards from the south entrance point.

Stone Island, about 20 feet high, lies in the mouth of this cove.

Anchorage.—Anchorage may be obtained in from 11 to 14 fathoms water, at 400 yards from a small projection at the middle of the head of the cove.

Stanley Cove, ¼ mile south of Birchy Cove, is a small bight, with several houses on the shingle beach that forms the head. It affords shelter for boats, or small craft only, in 9 fathoms, or less water as convenient.

Old Harry, a high pinnacle rock, is the southernmost of three similar pillars that stand close to the headland south of Stanley Cove.

Manuel Arm, a large open bay, is entered south of Old Harry, but contains no anchorage, except for boats or fishing vessels, quite close to the shore.

Great Jervis Harbor is on the west side of the entrance to Despair Bay. The north entrance point is low, and fringed by rocks that extend off 70 yards. The north shore of the harbor is cut up into several small coves.

Man-of-war Cove, the easternmost, has anchorage for small vessels as far as the wharf on the east shore.

Man-of-war Rocks, on the west side of the entrance to Man-of-war Cove, consist of two pinnacles, 4 feet high, joined at low water. A rock, that uncovers at low water, lies 40 yards south of these rocks.

Push Through is a passage for boats at high water between the promontory and the island forming the south shore of the harbor, under a bridge which connects them. A considerable settlement is situated in this locality, with a schoolhouse and a church. A flagstaff surmounts the island at an elevation of 102 feet.

Great Jervis Island divides the entrance to the harbor. The summit, 442 feet high, is a sharp peak near the SE. extreme, which falls in cliff 365 feet, and is bold-to. Shoal water extends 50 yards from the north extreme.

The Brothers uncover 3 feet at low water, and extend 150 yards from the NW. extreme of Great Jervis Island; shoal water extends about 75 yards northward from the Brothers.

Dory Rock, that just uncovers at low water, lies close to the west extreme of Great Jervis Island.

The Barasway is situated about $\frac{1}{2}$ mile southwestward of Great Jervis Island; a small rock lies close southward of the northern entrance point, and a rock, on which the least water is 7 feet, lies 150 yards from the south shore and $\frac{1}{4}$ mile west from Push Through.

Anchorage.—Anchorage may be obtained, in 14 fathoms water, off the entrance to the Barasway; in from 9 to 16 fathoms, south and west of Pearl Island; or in 8 fathoms, between Great Jervis Island and Man-of-war Cove.

Directions.—The best passage to the harbor is south of Great Jervis Island, but if proceeding to the anchorage off the Barasway, care should be taken to avoid the rock, with 7 feet water on it, off the south shore.

Small vessels may proceed, from the northern anchorage to the western, by keeping the north entrance point of the harbor just open south of Man-of-war Rocks, bearing N. 79° E. (S. 73° E. mag.), which will lead between the Brothers and the rocks west of Shallop Cove; and the high house of Western Harbor open west of Great Jervis Island, bearing S. 13° E. (S. 15° W. mag.), clears the Brothers passing to the westward.

Tides.—It is high water, full and change, in Great Jervis Harbor at 8h. 55m.; springs rise $6\frac{1}{4}$ feet, neaps rise 5 feet; neaps range 3 feet. The tidal streams are scarcely perceptible in this neighborhood, and are principally dependent on prevailing winds.

Pigeon Island, 19 feet high, lies south of Western Harbor, a small cove on the south side of the promontory south of Great Jervis Harbor. Crib Nose Shoal, with 11 feet water on it, lies 150 yards south of Pigeon Island.

Pigeon Island Shoal, with 13 feet water over it, lies 600 yards SE. from Pigeon Island.

Saddle Island, nearly one mile southward of Dawson Point, is surmounted by two conspicuous hills, the southwestern conical and 243 feet high. The east shore of the island is encumbered with rocks as far as White Rock, an islet 7 feet high, eastward of which there is no danger. Two sunken rocks lie nearly 200 yards from the south extreme, and a short distance further south is Black Rock, an islet 9 feet high.

Buffett Tickle, the narrow passage north of Saddle Island, can be used by small vessels. The passage between Saddle Island and Middle Island is clear in mid-channel.

Middle or Crooked Island, 225 feet high, has no danger beyond a short distance from the east shore, but the west shore is foul, and the bight contains several islets and rocks.

Mark Rocks uncover $4\frac{1}{4}$ feet at low water, and are 250 yards SE. of the SE. extreme of Middle Island.

Mark Rocks Shoal, with 3 fathoms water over it, lies 100 yards eastward of the rocks.

Bonne Bay, entered between Middle and Taylor Islands, extends $2\frac{1}{4}$ miles in a northerly direction.

Drake or Gooseberry Island, 31 feet high, lies in the middle of the bay, and there is a good passage on either side of it, but it should not be approached within 100 yards.

Anchorage.—Anchorage for small vessels may be obtained at the head of Bonne Bay, in 7 fathoms water, at 600 yards from the mouth of the brook at the head.

Taylor Island is 408 feet high, and over the north extreme is a round wooded hill 352 feet high, known as Crib Nose.

Whale Rock dries 4 feet at low water, and lies 550 yards SSE. of Grip Head, the SW. point of Taylor Island.

The east shore of Taylor Island is very foul, small rocks and islets extending 150 yards from the shore; but the greatest danger is Hardy Rock, which lies 250 yards from the north point of Hardy Cove, a small bight with some houses round it. The extreme of the west shore of Bonne Bay shut in with Drake Island, bearing N. 31° W. (N. 3° W. mag.), leads east of this danger.

Rocky passage, the channel west of Taylor Island, contains numerous rocks, and is available with accurate local knowledge only.

Taylor Rock, with 4 fathoms water on it, lies 750 yards S. 65° E. (S. 37° E. mag.) of Salmon Point. The mark for clearing Hardy Rock will lead east and Mosquito Island open south of Grip Head bearing N. 67° W. (N. 39° W. mag.) will lead south of this shoal.

Bonne Bay Harbor, about 700 yards in diameter, situated NW. of Taylor Island, is completely sheltered from all winds, but the anchorage space is limited to the western portion, where good shelter may be obtained in from 14 to 17 fathoms water, as convenient. Large vessels should anchor in the latter depth, with Drake Island completely shut in with Poole Island, bearing about N. 28° E. (N. 56° E. mag.)

A rock, which dries one foot, lies nearly 100 yards off the south entrance point of the cove on the west shore, and a shoal, with 3½ fathoms water on it, is situated in the middle of the cove.

Kelpy Rock, with 3½ fathoms water on it, lies 1,100 yards S. 70° W. (N. 73° W. mag.) from the west extreme of Grip Head, and a shoal, with 4 fathoms water on it, lies 150 yards northwestward of Kelpy Rock.

Tides.—It is high water, full and change, in Bonne Bay Harbor at 8h. 54m.; springs rise 6½ feet, neaps rise 5 feet; neaps range 3 feet.

Mosquito Harbor, close west of Bonne Bay, extends nearly 1½ miles in a northerly direction, and is free from danger, but there is no anchorage, except for small vessels, in 8 fathoms water, in a small cove on the west side of the head.

Mosquito Island, separated from the west entrance point of the harbor by a shallow channel, containing several rocks, is flat in outline, 295 feet in height, and cliffy to seaward.

Mosquito Back Cove is completely exposed.

Halibut Rocks, two small islets, the higher 5 feet above high water, lying nearly 1,400 yards S. 51° W. (S. 79° W. mag.) from the west point of Mosquito Island, are surrounded by sunken rocks, that extend ¼ mile in a SSW. direction. Bear Head open south of Fish Head, bearing West (N. 62° W. mag.), leads south of all these dangers and those south of Taylor Island.

Razorback Rock, with 3½ fathoms water on it, lies 1,100 yards N. 70° W. (N. 42° W. mag.) from Halibut Rocks.

Fâcheux Eye, a small cove with a waterfall at the head, is close east of the entrance to Fâcheux Bay. This cove is available for boats only, and is entered by keeping close to the east shore, as the west side is foul.

Fâcheux Head Shoal, with 4 fathoms water over it, lies 300 yards from the shore, and 600 yards from the entrance to Fâcheux Eye.

Fâcheux Bay extends 10 miles, north, in nearly a straight line, but there are no anchorages except at the places described.

Anchorage.—**Allan Cove**, on the east shore, $4\frac{1}{2}$ miles from the entrance, is $\frac{1}{2}$ mile deep. Good anchorage may be obtained in from 8 to 9 fathoms water at about 400 yards east of the line of the entrance points.

Anchorage may be obtained southward of the narrows, at the head of Fâcheux Bay, in from 6 to 10 fathoms water, the former depth at $\frac{1}{2}$ mile distant. Southward of that depth the bank falls suddenly to a depth of 40 fathoms.

Brent Cove, on the west shore, opposite to Allan Cove, contains the best anchorage. It is $\frac{1}{2}$ mile deep, but ground, that uncovers at low water, and shoal water extend 600 yards from the head.

Anchorage may be obtained in from 6 to 10 fathoms water, as convenient, close within the entrance points, but the plateau falls suddenly eastward, to a depth of 34 fathoms.

Black Otter Rub, a small projection 10 feet high, situated about $\frac{1}{2}$ mile south of the cove, is a good indication of the approach to it.

Dennis Arm, an indentation one mile long and 150 yards broad, affords good anchorage for small vessels in from 7 to 9 fathoms water. The north shore is bold-to, but off the south side there is a fringe of foul ground that dries at low water, and the head dries for the distance of 200 yards from the tree line.

Warren Cove, on the west shore of Fâcheux Bay, at $1\frac{1}{2}$ miles from the entrance, affords anchorage for small vessels only in 8 fathoms water, and close to the shore. A conspicuous white stripe shows on the cliff on the north side of the cove.

Fâcheux Harbor, suitable for boats only, is separated from Warren Cove by a bare promontory, 167 feet high, that terminates in low rocky points.

Dragon Bay extends in a westerly direction for about 3 miles, and there is no anchorage for any but small vessels in the narrow arm at the head.

The only danger is a rock, 100 yards from the shore, immediately eastward of a small projection on the north shore, west of which is a waterfall.

Muddy Hole is a small boat harbor nearly one mile westward of Dragon Bay. Boats lie at the head, and a depth of 8 feet may be found, at high water, in the entrance, but there is a rock that uncovers in the middle, and local knowledge is requisite to avoid it.

Richards Harbor, about 3 miles west of Fâcheux Bay, is entered between precipitous cliffs on the west side, and low points under cliff on the east shore.

At 600 yards within the entrance the harbor trends more easterly for a farther distance of 300 yards, with a breadth of 400 yards to the head. The turning point on the south shore is a small islet 12 feet high, and joined to the mainland at low water. Sunken rocks lie a short distance SW. of this islet.

Anchorage.—This harbor should be used for temporary anchorage only, as the depths vary from 20 to 24 fathoms, and the holding ground is not good; also terrific squalls sweep down the valley with strong breezes from NW. to SE., sufficient to cause vessels to drag, though there is no sea. In emergency they can, however, be moored to rocks on the shore.

Shoal Point Rock, with $4\frac{1}{2}$ fathoms water over it, lies 200 yards southward of the west entrance point.

(H. O. Chart No. 1108, and B. A. Chart No. 2141.)

Coast.—Westward of Richards Harbor the coast is formed of cliff, alternately colored red and gray, the former color being very conspicuous in sunshine. A wedge-shaped rock, 22 feet high, lies close to Upper Shoal Point, at one mile west of Richards Harbor, westward of which and 200 yards distant, is a bank, with $5\frac{1}{2}$ fathoms water on it, that breaks in bad weather.

Horse Brook, a remarkable waterfall, is in the cove next west of Upper Shoal Point, and Mare Fall, a wider, but not so high a stream, falls over the cliffs into a cove $1\frac{1}{2}$ miles farther westward.

Several banks lie off this coast, but none are dangerous except with a very heavy sea.

Hare Bay, about 4 miles westward of Richards Harbor, extends 4 miles north, with an average breadth of $\frac{1}{2}$ mile, when it expands in two arms. Northwest Arm affords the best anchorage on the south shore of Newfoundland.

Bob Lock Cove, on the east shore, at $1\frac{1}{2}$ miles from the entrance, contains anchorage for small vessels in 15 fathoms water, with good holding ground. The south entrance point may be recognized by a remarkable round hill, 618 feet high, that is cliffy to seaward.

Water.—Water may be procured from a stream at the head of this cove.

Morgan Arm, the eastern of the two branches at the head, is one mile in length, 600 yards in width, and divided near the head into two shallow coves by low wooded projection. A waterfall descends into the western, and a large stream flows into the eastern, of these coves.

Anchorage.—Anchorage may be obtained, southward of the wooded projection, in from 5 to 8 fathoms water, as convenient.

Northwest Arm extends $1\frac{1}{2}$ miles in a NW. direction to the first narrows, the east side of which may be known by Sandy

Point, which terminates in a shingle spit, drying at low water, 100 yards from the trees.

The passage through the narrows is only 100 yards wide, with a depth of 7 fathoms in the middle, but within is a bay nearly 800 yards wide, with depths less than 3 fathoms at 300 yards, and less than 6 feet at 600 yards distant, respectively, north of the narrows.

Small craft can, however, proceed over this bar at high water, and through a second narrows, at $\frac{1}{4}$ mile from the first, within which will be found another basin $\frac{1}{4}$ mile long and 300 yards wide, but it dries at low water, 400 yards from the head.

Vessels drawing 9 feet, or less water, can lie afloat at low water close inside the second narrows.

Anchorage for vessels of any size may be obtained over a space $\frac{1}{4}$ mile long, and nearly 800 yards broad, with depths of from 5 to 9 fathoms, over mud, and good holding ground.

The eastern limit of the anchorage is southwestward of the point immediately north of a deep cove on the east shore, at $\frac{1}{4}$ mile from the entrance to the arm, whence the bank falls rapidly eastward to depths of 30 and 40 fathoms.

Tides.—It is high water, full and change, in Hare Bay at 8h. 38m.; springs rise 7 feet.

Cul-de-sac lies immediately westward of Hare Bay, and is an exposed cove, nearly one mile in length. The head is a narrow arm, $\frac{1}{4}$ mile long, and contains numerous boulders, while a few houses stand on its shores.

The west entrance point of Cul-de-sac is formed by a sharp-pointed and rocky hill, 724 feet high, terminated eastward by a low black rock. A rock that uncovers lies close to it, and a shoal, with $3\frac{1}{2}$ fathoms water on it, a little more than 200 yards SE. from the black rock.

Anchorage.—Small vessels may find temporary anchorage, in 9 fathoms water, eastward of the entrance to the head, but must be prepared to leave when the winds blow between SE. and South, as a heavy sea is soon formed.

Coast.—From Cul-de-sac westward to Red Point, the coast, cliffy and intersected by deep ravines, is generally steep-to, while the land behind attains elevations of 1,000 to 1,500 feet, in ranges that extend inland.

Numerous shoals extend SE. from Red Point, but the only one that is dangerous in ordinary weather is Red Point Rock, with 4 fathoms water on it, situated 650 yards S. 68° E. (S. 41° E. mag.) from Red Point.

In bad weather this coast should not be approached nearer than $\frac{1}{4}$ mile, as these banks make a confused sea.

Red Point, so named from the color of the cliffs, is 3 miles westward of Hare Bay.

Devil Bay, 4 miles west of Hare Bay, extends northward $2\frac{1}{2}$ miles, with a slight bend, and has deep water to the head, where anchorage for small craft may be obtained, in 7 fathoms water, close to the shore. Within the entrance, on either side, is a waterfall, and on the west side, Blow-me-down, a steep bluff 1,280 feet high.

Rencontre Bay extends 3 miles in a northwesterly direction from Devil Bay, and then takes a sudden bend north for 2 miles to the head.

Anchorage.—Anchorage may be obtained at the head of this bay in from 11 to 18 fathoms water.

Water.—Water may be obtained in many places, and wood at the head of the bay.

Little Bay, on the north shore of Rencontre Bay, and entered on the east side of Ironskull, a conspicuous hill 1,077 feet high, with a remarkable white spur that shows plainly from the southward, extends $1\frac{1}{2}$ miles in a north direction, but the water is too deep for anchorage. Just over the head is Sugarloaf, a remarkable hill 1,290 feet high.

The Cove lies on the west side of High Lookout, 2 miles within the entrance to Rencontre Bay. There are several houses at high-water mark, from which sand dries for the distance of 100 yards, being the débris left by a river that drains the valley between Chaleur and Rencontre Bays.

Anchorage.—Anchorage for small vessels may be obtained in 17 fathoms water, 300 yards from the shore, but it is unsafe in NE. winds, when terrific squalls sweep down the bay over the high hills surrounding it.

Tides.—It is high water, full and change, in the cove at 8h. 55m.; springs rise $6\frac{1}{2}$ feet; neaps rise $4\frac{1}{2}$ feet.

Barasway, $\frac{1}{2}$ mile west of the cove, affords anchorage in 10 fathoms water, at about 350 yards off the beach.

New Harbor, west of the island of that name, is $\frac{1}{2}$ mile deep, and 400 yards wide at the head, and affords anchorage in 15 fathoms water, at 200 yards from the head, though exposed to easterly winds, but small vessels may find good shelter in 5 fathoms off a small cove containing a few houses, situated east of the head.

Hares Ears Point, $\frac{1}{2}$ mile SW. of Pinchgut Point, is so named from two peaked rocks off the extreme, with a hole through between them, the inner 84 feet above high water.

Lower Rock, with 2 feet water on it, lies 1,100 yards N. 68° E. (S. 85° E. mag.) from Hares Ears Point; and Hares Ears Rock, with 5 feet water on it and 15 fathoms close to the southward, lies 400 yards S. 85° E. (S. 58° E. mag.) from Hares Ears Point. The

west point of Devil Bay open east of Pinchgut Point, bearing N. 26° E. (N. 53° E. mag.), clears Hares Ears and Lower Rocks passing to the eastward; and the Bill of Lance Cove open south of Hares Ears, N. 80° W. (N. 53° W. mag.), clears Hares Ears Rock passing to the southward.

Lance Cove, west of Hares Ears Point, is 1,200 yards wide and $\frac{1}{4}$ mile deep. Anchorage may be obtained for small vessels, with shelter from offshore winds, in from 3 to 6 fathoms water, at 250 yards from the beach.

Lance Cove Point, 250 feet high, dividing Lance Cove on the east from Chaleur Bay on the west, has steep cliffs on both sides, and ends in a sharp point.

Chaleur Bay extends $5\frac{1}{4}$ miles in a northwesterly direction, with one bend. It is 600 yards wide at the entrance, but expands to 1,200 yards within, narrowing gradually to the head.

Gull Island, $\frac{1}{4}$ mile west from Lance Cove Point, is white, 102 feet high, and marks the east side of Chaleur Bay. Shooter Rock, 2 feet above high water, lies close to the east shore 1,200 yards within the entrance.

Anchorage.—Cooper Cove is $2\frac{1}{4}$ miles within the entrance on the west side. A brook, that drains a deep valley, flowing into it has formed a sandy beach, off which, at 300 yards, anchorage may be obtained by small vessels in from 9 to 14 fathoms water. There is a similar cove opposite on the east side, but without anchorage.

Anchorage may also be obtained, at 600 to 1,200 yards from the head of the bay, in from 6 to 15 fathoms water, over mud.

Water.—Wood and water can be easily procured.

Fransway Bay, also known as François Bay, is an inlet $1\frac{1}{4}$ miles deep and 400 yards wide, and surrounded by steep bluffs, situated 3 miles westward of Hares Ears Point. A brook flows into the head of the inlet, and the settlement is east of the brook and under the Friar, a cliffy eminence 680 feet above high water, with landslips extending to the water's edge.

Anchorage.—Anchorage may be obtained, in from 14 to 22 fathoms water, within 400 yards of the head.

Tides.—It is high water, full and change, in Fransway Bay at 8h. 40 m.; springs rise $6\frac{1}{4}$ feet, neaps rise $4\frac{1}{4}$ feet.

Coast.—Brandy Head is a gray, conical-shaped promontory, 278 feet high; between it and Nick Power Point is a cove faced by steep cliffs, and on the east side is Brandy Cove, 600 yards deep.

Nick Power Point, 1,200 yards west of Brandy Head, is an isolated hillock 216 feet high, terminating in rugged points, with breakers 100 yards off the west extreme.

Nick Power Cove extends 1,000 yards from this point, with a general width of 300 yards. At the west side of the head of the

cove is a brook, off which, 100 yards, lies a rock that covers at high water.

Anchorage.—Anchorage may be obtained with shelter from offshore winds, in 15 fathoms water, eastward of this rock.

The Bar, with 3 fathoms water on it, lies 400 yards N. 71° W. (N. 44° W. mag.) from the west extreme of Nick Power Point.

Aviron Point, $6\frac{1}{2}$ miles WSW. of Hares Ears Point and 400 yards west of Distress Rock, is the extremity of an isolated conical-shaped hill, 290 feet above high water, connected by a low marsh to the mainland. From this to Styles Point, $\frac{1}{4}$ mile in a northerly direction, the coast is rugged, with deep gaps in the cliffs.

Aviron Rock, 20 feet high, lies in the middle of the entrance to Aviron Bay. From it a bank extends $\frac{1}{4}$ mile SSE., at the extreme of which there is a depth of $2\frac{1}{2}$ fathoms.

Aviron Bay, also known as Oar Bay, stretches with a slight curve in a northerly direction for $3\frac{1}{2}$ miles, with a general width of 600 yards, and depths of water ranging from 43 to 86 fathoms.

Anchorage.—Northeast Cove, near the head, has anchorage in from 16 to 20 fathoms water.

The head of the bay, a basin nearly $\frac{1}{4}$ mile deep, is entered by a narrow passage 150 yards wide, through which a depth of 15 feet can be carried. In it there is excellent anchorage for small vessels in $4\frac{1}{2}$ fathoms water. On the north side is a magnificent waterfall, over the slope of a hill 1,120 feet high.

Bagg Cove lies immediately within the narrows on the west side, but affords no anchorage.

Water.—Water may be obtained at many places in this bay, and small wood from near the head.

Cul-de-sac Bay $1\frac{1}{4}$ miles WNW. of Aviron Point, is nearly $\frac{1}{4}$ mile deep, and divided, at the head, into two coves by Battery Point, a bare promontory 120 feet above high water.

Anchorage.—The settlement is on the east side of this point, but only small vessels can anchor off it. Large vessels will find sheltered anchorage in 5 fathoms water, over sand, at 400 yards S. 18° E. (S. 9° W. mag.) of Battery Point.

Wild Cove, on the east side of the shingle beach connecting Cape La Hune with the mainland, is $\frac{1}{4}$ mile deep, and at its head is a sandy beach, 400 yards from which anchorage may be obtained, in from 6 to 7 fathoms water, with shelter from offshore winds.

Penguin Islands.—This group, which occupies a space of more than one mile square, is $9\frac{1}{2}$ miles SSW. $\frac{1}{2}$ W. from Cape La Hune, and consists of numerous islands and rocks, Harbor Island, the highest and easternmost, being 78 feet above high water.

On the south side of this island is a small cove where boats find shelter, but a heavy sea rolls in with southerly winds. The passages between the islands are completely blocked for ships.

Mile Rock, with 9 feet water over it, and steep-to, is $1\frac{1}{6}$ miles N. 68° E. (S. 85° E. mag.) from Harbor Island.

Watch Rock, awash at low water, and the summit of a bank on which there are several shoals, is 6 miles N. 88° E. (S. 65° E. mag.) from Harbor Island.

Pinnacle Shoal, with 4 fathoms water over it, bears S. 27° W. (S. 54° W. mag.) $1\frac{1}{2}$ miles; and a shoal, with 6 fathoms water, S. 75° W. (N. 78° W. mag.) $1\frac{1}{2}$ miles distant from Watch Rock; both these shoals break in bad weather.

Cape La Hune a peninsula joined to the mainland by a shingle beach, with a castellated rock in the center, has three peaks; the western, a remarkable cone 579 feet above high water; the northern, 424 feet, terminates to the southeastward in Long Point, a rugged, curved neck of land that forms Cape Cove, an indentation 700 yards deep with sheltered anchorage from offshore winds in from 9 to 11 fathoms water.

A rock, with 15 feet water over it, lies 100 yards from the south extreme of the cape.

La Hune Bay extends north from the cape $6\frac{1}{2}$ miles, with an average width of 800 yards to the head, at $\frac{1}{2}$ mile from which there is excellent anchorage in from 10 to 13 fathoms water, over mud.

On the east side the almost continuous line of cliffs, over 1,000 feet high, is terminated at the north end by Northeast Cove, 600 yards deep, with a sand spit 200 yards from the south shore, and another the same distance from the head. There is good anchorage in 14 fathoms water 300 yards offshore.

At the south end of the cliffs is Deadman Cove, 600 yards deep, with two waterfalls on the north side, where water may be procured easily. Anchorage can be obtained in from 12 to 15 fathoms water, good holding ground.

A rock, with 15 feet water on it, lies 200 yards N. 60° W. (N. 33° W. mag.) from the south point of Deadman Cove; and two rocks, the southern 250 yards off, with 9 feet water over it, and 18 fathoms close-to, extend to the southeastward of West Point.

The west entrance point of La Hune Bay is a peninsula surmounted by a remarkable cone 697 feet above high water, terminating in rugged cliffs at the outer coast and steep bluffs in La Hune Bay, and joined to the mainland by a shingle beach.

Ice.—La Hune Bay freezes over about 1st December, and ice disappears by 1st April, but the ice breaks up easily, and is no obstacle to vessels, which come and go all the year, entering at any time. In 1885 field ice arrived in February and left on 1st April.

Tides.—It is high water, full and change, in La Hune Bay at 8h. 40m.; springs rise $6\frac{1}{2}$ feet, neaps rise $4\frac{1}{2}$ feet.

Long Point juts out from the peninsula at the west entrance of La Hune Bay, and West Point is the SE. extremity.

Long Point Shoal, with a depth of 10 feet, lies 600 yards N. 85° W. (N. 58° W. mag.) from Long Point. The eastern Gulch Cove Island open west of Cape Island, bearing N. 66° W. (N. 39° W. mag.), leads nearly 200 yards SW. of this shoal.

Cape Island, 267 feet high, flat and rugged, is separated from the base of a conical hill by a channel 400 yards wide, in the middle of which is a shoal with 3½ fathoms water over it.

La Hune Harbor, west of the shingle beach joining Long Point Peninsula to the mainland, is open and exposed, having from 8 to 11 fathoms water, but no shelter. The fishing craft belonging to the settlement moor under a cliff at the head of the bay, where neither wind nor sea reaches them even in winter.

Cape Rocks, 4½ miles N. 85° W. (N. 58° W. mag.) from Cape La Hune, are a cluster of bare black islets, the highest at the south extreme being 30 feet above high water.

Shoal and uneven ground surrounds Cape Rocks for 1½ miles, except off the south extreme, where the water deepens suddenly to 50 fathoms at 200 yards distant.

Gulch Cove, 7½ miles NW. of Cape La Hune, is 600 yards deep, with anchorage for a small vessel in from 5 to 7 fathoms water; but with SW. winds a heavy sea rolls in. The hills fall almost perpendicularly on each side of the cove to a narrow low neck of land that separates it from Southeast Arm of Little River.

Gulch Cove Islands are two rocky islets; the higher and western, 95 feet high, bears N. 67° W. (N. 40° W. mag.) ½ miles distant from Cape La Hune. Numerous rocks surround them; the outer and western, that covers 5 feet at high water, lies 950 yards S. 74° W. (N. 79° W. mag.) from the larger island, with a depth of 30 fathoms at 100 yards SW.

Coast.—The coast trends from Gulch Cove WSW. for 4½ miles to Little River, and is bold and steep.

Seal Rocks, 18 feet high, lie 1,200 yards SE. from the entrance to Little River, and are not easily distinguished against the dark coast. A rock, awash at low water, lies 100 yards N. 61° E. (N. 88° E. mag.) from Seal Rocks.

Rocks, about 5 feet above high water, lie between Seal Rocks and the east point of the entrance to Little River. There is no passage between them and the shore.

Little River is a long arm of the sea, with an entrance 130 yards wide, and a channel of that width for 1,200 yards to Jerts Cove, when it expands to 600 yards, with excellent anchorage in from 7 to 10 fathoms water, over mud. Again narrowing to 130 yards, the channel extends for 1½ miles to Frenchman Cove, a fine basin

1½ miles long by ¼ mile broad, with good anchorage in from 5 to 9 fathoms water, over mud. Little River here divides into two branches.

Small vessels should be careful not to leave Little River when the wind is against the tide, as a confused sea soon gets up.

Southeast Arm extends 3 miles East, with a general width of 600 yards, and has good anchorage, in from 7 to 8 fathoms water, for the first mile, after which the arm widens, and deepens to more than 37 fathoms, shallowing from that and narrowing gradually to the head. A shoal, with 3½ fathoms water over it, lies off the southern shore, about 2 miles distant from the head.

Northeast Arm is circuitous for 1½ miles, then it is divided into two arms, the Northeast and Northwest. It has a depth of about 4 fathoms for the first mile, shoaling to 3 fathoms about ¼ mile south of the point dividing the arms, the water being slightly deeper on the west shore.

The depths in the Northwest Arm are from 4 fathoms to 1½ fathoms near the head, and in the Northeast Arm, for 3½ miles to the head, the depths are irregular, in some places as little as 6 feet.

The sides of Little River are steep and bold, in many places falling precipitously from hills ranging from 750 to 1,000 feet in height. There is no danger except the débris from the hills quite close to the shore.

Tides.—It is high water, full and change, at Little River at 8h. 40m.; springs rise 6½ feet, neaps rise 4 feet. A strong tidal stream runs in the direction of the channel, attaining a strength of 2 knots an hour at springs.

Little River Rocks, 4 feet above high water, lying 6½ miles S. ½ E. from the entrance of Little River, are steep-to on the south side, but there is a fringe of shoal water on the north side extending 200 yards from the rocks.

Little River Bank.—Eastern Rock, with 3½ fathoms water over it, lies near the SE. extreme of Little River Bank, 3½ miles S. 40° W. (S. 67° W. mag.) from Little River Rocks; from this rock uneven ground extends 2½ miles, in a NW. direction, to Big Shoal, a head on which the depth is 7 fathoms, near the NW. extreme of the banks; the bottom is of coral.

Bay de Vieux or Old Man Bay, 3 miles northwestward of Little River, is an arm of the sea 6 miles long and generally ¼ mile wide, with deep water.

A rock, awash at high water, lies quite close to the west shore, 2 miles nearly from West Point, and is the only danger in the bay.

Denny Island, 335 feet high, lying on the east side of the bay, one mile within East Point, is steep-to except off the NW. point, where there is a rock with one foot water.

Anchorage.—Dog Cove, east of Denny Island, is only 150 yards wide, but has good anchorage for small craft, in 8 fathoms water, near the head.

The Nook, $\frac{1}{4}$ mile long by 300 yards broad, is an inlet on the east side of the bay which affords anchorage for small craft at its head, in from 9 to 12 fathoms water.

Anchorage may be obtained within $\frac{1}{4}$ mile of the head of Bay de Vieux in from 7 to 12 fathoms water, shoaling gradually to the shore.

Water.—At this latter anchorage the bay is 600 yards wide, and several streams, from which water may be readily obtained, run into the head of the bay.

Cobbett or Mosquito Harbor, $1\frac{1}{4}$ miles westward of Bay de Vieux, is a basin nearly one mile long, with an average width of 450 yards, approached through a narrow channel 100 yards wide.

It is perfectly sheltered, but the water is so deep in the greater part of it (20 to 35 fathoms) that anchorage even for small craft can only be obtained in 12 fathoms water, near the west end, off a cove where are a few houses. The only danger is a rock about 50 yards off the south side of this cove.

East Black Rock, 5 feet high, and near the east entrance point, lies $\frac{1}{4}$ mile S. 61° E. (S. 34° E. mag.) from the west point of the entrance, and two rocks, awash at low water, lie off it, the outer, nearly 200 yards S. 29° E. (S. 2° E. mag.).

Fox Island, $1\frac{1}{4}$ miles WSW. of Cobbett Harbor, is 310 feet above high water, rugged and faced by cliffs, and separated from the mainland by a channel 130 yards wide, in the west part of which is good anchorage for small craft.

Rocks and foul ground lie off Fox Island, $\frac{1}{4}$ mile distant on the west and south sides, and one mile on the east; no vessel should navigate between them.

Brimball Storehouse Cove, $1\frac{1}{4}$ miles West from Fox Island, is an inlet $\frac{1}{4}$ mile long, with shallow water.

A rock, with 4 feet water on it, lies 250 yards S. 45° W. (S. 72° W. mag.) from the east point of Brimball Storehouse Cove.

Bear Head, the east point of White Bear Bay, 6 miles westward of Bay de Vieux, is a steep bluff, falling abruptly from the summit, 526 feet above high water, and fringed by dark cliffs. Off the west point is a pinnacle rock, and there is deep water close to the head. A rock, on which the depth is less than 6 feet, lies about $\frac{1}{4}$ mile SE. of Bear Head.

Squier Cove, on the east side of the entrance to White Bear Bay, extends east 1,200 yards, has deep water to the shore, and no anchorage; a few houses are situated near the head of this cove.

Bear Island, the summit of which is a dark, wooded cone, 600 feet above high water, falls steeply on the south and east, but gradually on the other sides. The east and south sides are free from danger, with deep water close to the shore. On the south side the cliffs are white and bare for some distance from the water's edge, and may be readily distinguished from the dark cliffs under Bear Head.

Cul-de-sac Inlet, on the west side of Bear Island, is 1,200 yards deep, with from 16 to 20 fathoms water in it, and an island off the south point of the entrance. A rock, awash at high water, lies close to the southern point, with deep water close-to.

Cul-de-sac Rocks, two heads with 4 feet water over them, and depths from 14 to 17 fathoms on the west side, lie 800 yards N. 65° W. (N. 38° W. mag.) from the south point of Cul-de-sac.

Deer Island, 132 feet high, is separated from the north point of Bear Island by a narrow, shallow channel, on both sides of which are a few houses.

Anchorage.—There is fair anchorage, with winds from South, round by South and East, to NE., in 14 fathoms water, at 300 yards southwestward of the islets off Deer Island; but a heavy swell rolls in with winds from SW. to West.

Seal Island, 85 feet high, lies 700 yards North from the NE. point of Bear Island, and Round Island, 113 feet high, lies 1,300 yards NW. by N. from the same point.

White Bear Bay extends 10½ miles from the north point of Bear Island to the fresh-water brook at the head, with an average width of 1,200 yards. The sides are steep, in many places precipitous, 700 to 1,000 feet high, with deep water close-to.

Anchorage.—The water in the bay decreases suddenly off Bald Point to 13 fathoms, shoaling again gradually to 8 fathoms, in which depth large vessels should anchor, with Blow-me-down Point bearing S. 28° W. (S. 55° W. mag.), distant 800 yards. The anchorage is perfectly sheltered and the holding ground good.

Water.—Northwest Brook, ¼ mile NNW. from Blow-me-down Point, is a conspicuous waterfall and an excellent watering place. Large vessels should not go so far up as this brook, for there is a shoal, with 3 fathoms least water over it, lying ¼ mile from it, and the water then shoals gradually to the head of the bay.

Telegraph Station.—There is a telegraph station at the head of the bay.

Turks and Woody Islands lie off the west entrance point of White Bear Bay, and are nearly connected to it by shoal water. Woody Island, 213 feet high, is very conspicuous from the dark color of the foliage and conical shape.

White Island, 138 feet high, shows in contrast to Woody Island, and together they form an excellent mark for distinguishing the west entrance to White Bear Bay.

Black Rock, 8 feet high, lies 550 yards S. 28° W. (S. 55° W. mag.) from White Island, and may be approached close-to on all sides except the east. Black Sunker, with one foot water over it, lies 335 yards N. 83° E. (S. 70° E. mag.) from Black Rock, and is the west end of a bank of shoal ground stretching from it, 800 yards, in an easterly direction.

Directions.—Entering White Bear Bay from the westward, White Island should be made, and mid-channel kept between that island and Black Rock, and between Deer Island and the mainland; rocks and shoal water extend about 600 yards from the west point of Deer Island.

Ramea Islands.—The Ramea Islands, a cluster of islands and rocks SSE. from the Burgeo Group, and south from White Bear Bay, consist of two large islands on the north and numerous smaller islets, rocks, and shoals, on the south.

Ramea Colombier Island, 135 feet high, one of the western of the islands, makes as a cone from all directions, and is surmounted by a flagstaff.

Turr Islands, $\frac{1}{4}$ mile WSW. from Ramea Colombier, are two bare rocks, the eastern 29 feet and the western about 10 feet above high water.

Northward Rocks, 8 feet high, are black islets with 8 fathoms water close-to, and lie 1,400 yards NW. by N. from Ramea Colombier.

The passage between these and the main islands is free from danger, but the water is comparatively shallow, and a heavy confused sea rises with a strong breeze against the tide.

Northwest Island makes as a series of peaks, the highest, Man-of-war Hill, being surmounted by a boulder, 211 feet above high water. A bank on which the depth is 6 fathoms, that breaks in bad weather, lies $\frac{1}{4}$ mile NNE. from Northwest Head, and a rock, awash at low water, lies 150 yards off the same head.

Gull Rock, 8 feet high, off the NW. point, is a round bare islet joined to the shore by rocks and shoal water.

The Channel between Northwest Island and the rest of the group is only 200 yards wide, except off Ship Cove and Muddy Hole, two small bays on the SE. side of Northwest Island, where anchorage may be obtained, for small vessels only, in from 6 to 11 fathoms water, with 200 yards swinging room.

The northern entrance has only 15 feet at low water; the southern shoals from 11 fathoms gradually to 5 fathoms midway between Muddy Hole and Ship Cove, then suddenly to 15 feet off the east point of that cove.

Southwest Island, about 80 feet high, forms the west side of Ramea Harbor, a good harbor for fishing craft. Southwest rocks extend westward 600 yards from the outer point of Southwest Island, and south of these islands lie numerous shoals, that are shown on the chart.

Harbor Island is much indented, and forms the east side of Ramea Harbor.

Copper Island, 102 feet high, is a conspicuous bare cone, with two rocks to the westward, and a shoal, with 3 fathoms water over it, close to the SE. extreme. Between this and the other islands there is no channel for a stranger among the numerous rocks and shoals.

Black Rock, 14 feet above high water, lies 1,300 yards N. 85° E. (S. 68° E. mag.) from Copper Island, is a small pinnacle with 10 fathoms water close to on all sides, there is no danger to the eastward of this rock.

Great Island, the largest of the group, is 1½ miles long and 1,200 yards broad, with a bold north shore, sloping abruptly from rugged hills that present an irregular outline. Gull Hill, 427 feet high, the highest of these hills, is flat-topped, and has a steep fall on the east side that makes it conspicuous when seen from the southward.

On the south side of Great Island numerous rocks and shoals forbid a stranger attempting the passage to Eastern Harbor.

Eastern Harbor, a small cove about ¼ mile west of Bonnels Point (the SE. point of Great Island), has a rock awash at low water in mid-channel, and 2 fathoms water at the head, where anchorage for fishing craft may be obtained, with shelter from all winds.

Ramea Southeast Rocks are two in number, with a boat channel between. The eastern and higher is 20 feet above high water, and lies 4 miles S. 30° E. (S. 3° E. mag.) from Bonnels Point. A rock, with one foot on it at low water, lies 400 yards S. 81° E. (S. 54° E. mag.) from these rocks.

Ramea South Bank, having 2½ fathoms water on it, lies 3 miles S. 43° W. (S. 70° W. mag.) from Ramea Southeast Rocks.

Ice.—During twenty years, northern ice only arrived at Ramea on four occasions, the dates being from the end of February to the middle of March, leaving from the first to the middle of April. The harbor is only frozen when northern ice is present.

Coast.—Northwest Head, the termination in that direction of the west point of White Bear Bay, is rugged and faced by cliffs.

Turks Head, a steep bluff with a rugged background, lies 1½ miles W. by N. from Northwest Head. Between these heads is Emily Storehouse Cove, ¼ mile deep, and exposed to all southerly winds.

Offer Sunker, with one foot water over it, lying nearly west, 1,400 yards from White Island, has depths of from 11 to 22 fathoms close-to, and is the outer danger in Turks Bight.

Anderson Rock, 1,800 yards N. 67° W. (N. 40° W. mag.) from White Island, is awash at high water, spring tides, and steep-to.

Anderson Sunker, 1½ miles N. 78° W. (N. 51° W. mag.) from White Island, consists of two rocks awash at low water.

Gull Island, 73 feet high, one mile WSW. from Turks Head, is the outer of a cluster of cliffy islets, but being of the same color as the mainland is not easily distinguished.

Several shoals which lie south and SSE. of Gull Island, and have depths of from 4 to 7 fathoms over them, break heavily in bad weather.

(H. O. Chart No. 1104, and B. A. Chart No. 2142.)

Red Island, 1½ miles NW. from Gull Island, and so named from the color of its outer cliffs, is divided into two parts by a low neck of land, the inner a wooded cone 377 feet, and the outer a flat-topped hill, with a white summit 326 feet above high water.

This island divides a deep bay into two parts, Northwest Arm, which extends 1½ miles, and Northeast Arm, 1½ miles.

Northeast Arm has deep water, and no shelter for one mile, when it narrows to 50 yards, the entrance of an inner basin, named Doctor Harbor, 750 yards long by 150 wide, with sheltered anchorage for small craft only, in 4 or 5 fathoms water.

Red Island Harbor, separating the island from the mainland, is ¼ mile long by 200 yards broad, and can be entered, only from the eastward, through a channel 30 yards wide; it is therefore only suitable for fishing craft.

Northwest Arm.—Cross Rocks narrow this arm to 200 yards, with a depth of 5½ fathoms in the channel between them and Red Island; within these rocks there is anchorage for small craft, in from 8 to 9 fathoms water, with good holding ground.

The western point of Northwest Arm is a series of rocky hummocks faced by cliffs on the seaboard; Western Point Rock, with 13 feet water over it, lies 270 yards south of the point.

White Island Shoal, with 3½ fathoms over it, and deep water close-to, lies 800 yards S. 75° W. (N. 78° W. mag.) from Western Point.

(B. A. Chart No. 272.)

Bay de Loup Point, 1½ miles west from Western Point, is the east entrance of the bay of that name, and the extremity of an island 223 feet high, connected at low water with a narrow peninsula. Between Bay de Loup and Western Points is a deep bay that should not be entered within the line of the points. The coast line is rugged and fringed by cliffy islets and rocks.

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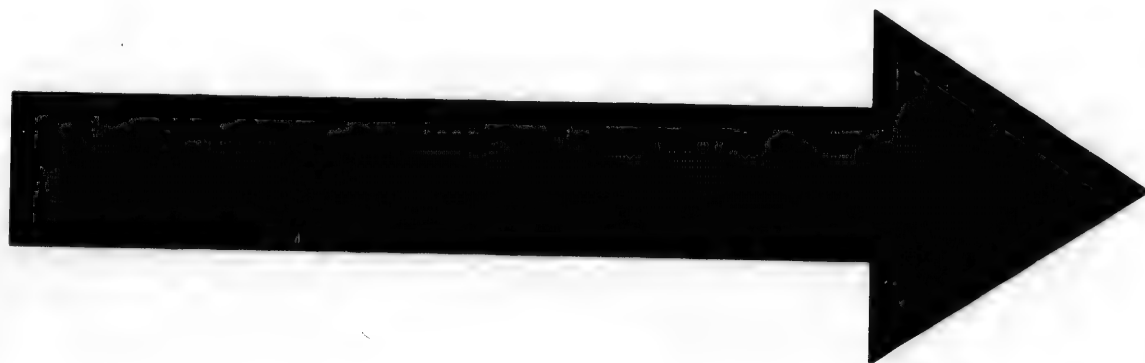
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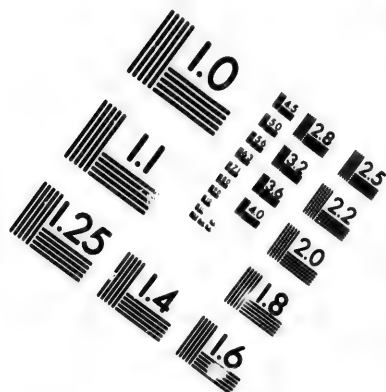
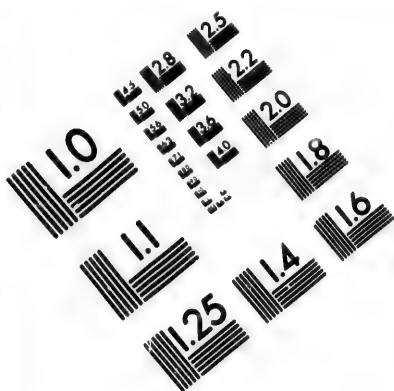
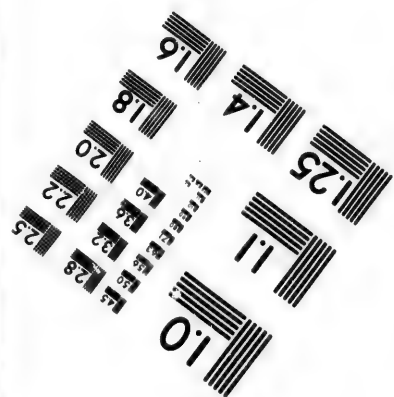
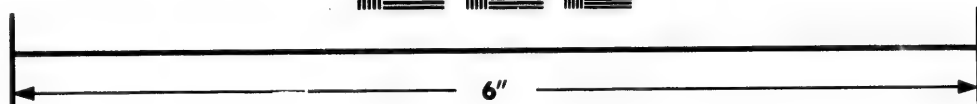
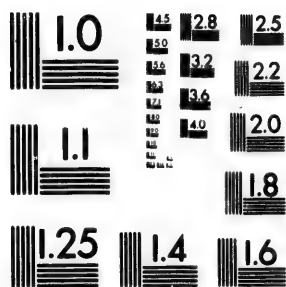


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Bay de Loup Rock, with 7 feet water over it, lies $\frac{1}{4}$ mile S. 13° E. (S. 14° W. mag.) from the SE. extreme of Bay de Loup Point.

Bay de Loup or Wolf Bay, extends $2\frac{1}{4}$ miles in a northeasterly direction from Bay de Loup Point.

Anchorage.—The sides are precipitous, with deep water close-to, and there is no anchorage until Blow-me-down, a steep bluff, 513 feet high on the west side, about $\frac{1}{4}$ mile from the head, is passed, when good shelter may be obtained in 10 fathoms water, gradually decreasing to $4\frac{1}{2}$ fathoms toward the head. The most convenient anchorage is off the houses at the mouth of Seal Brook, a small stream NNE. from Blow-me-down.

Kings Harbor, $\frac{1}{4}$ mile deep, and immediately west of King's Head, the western entrance point of Bay de Loup, affords anchorage in 9 fathoms water, 150 yards off the eastern shore. Kings Harbor Brook runs in on the west side, and has formed a bank off the mouth extending 250 yards from the west point.

Buffetts Island, 91 feet high, and situated off Kings Harbor, has a ledge of rocks parallel to, and 100 yards from, the north side of the island; between them there is only a depth of 6 feet.

Anchorage.—There is fair anchorage NW. of Buffetts Island, in 13 fathoms water, over sand, but a swell rolls in with southerly gales.

The Ha-ha, an inlet stretching in one mile, to the northward of Aldridge and Richards Heads, has no danger in it till within 100 yards of the head, near which there is anchorage for small vessels in from 10 to 12 fathoms water, but exposed to easterly winds.

Green Hill Island, 280 feet high, forms the south shore of The Ha-ha.

Aldridge Rock, awash at high water, lies 250 yards S. 37° E. (S. 10° E. mag.) from Aldrich Head. There is a depth of 48 fathoms at 200 yards off on the east side, but only $6\frac{1}{2}$ fathoms water between it and the shore.

Richards Head, 340 feet high, on the mainland within Green Hill Island, is a remarkable saddle-topped hill, with steep cliffs on the SW. side, and dark foliage on all other slopes. It is conspicuous from all directions, and forms an excellent mark for recognizing Burgeo.

Grandy Island, rugged and barren, is separated from the mainland by Long Reach, a narrow strait, the eastern entrance to which, under Richards Head, is shallow; the southwestern entrance is spanned by a bridge.

Burgeo, a considerable village, on the east side of Grandy Island, has several conspicuous houses, and a wooden church with a short spire.

Communication.—The Coastal Steamship Company's steamers from St. Johns call here fortnightly during summer and autumn.

Supplies may generally be obtained in small quantities here, but the water obtained from Mercer Cove is not good; excellent water may, however, be obtained in Bay de Loup.

Telegraph.—There is a telegraph station at Burgeo.

Ice.—Burgeo Port, although never frozen over, is occasionally blocked for a few days by ice from the outer coves, which moves off in February and March; vessels come and go all the year. Northern ice only appears at intervals, arriving generally between the middle of February and middle of March, and seldom remaining more than a fortnight or three weeks.

Short Reach, extending $1\frac{1}{2}$ miles into Grandy Island, with an average breadth of 300 yards, affords anchorage at the head in $8\frac{1}{2}$ fathoms water, over mud, with swinging room for small vessels.

Smalls Island, surmounted by a flagstaff, is the southwestern of the groups of islets and rocks off the S.E. of Grandy Island, making between it and the latter a capital harbor for boats and small vessels, with 11 feet water in it.

A Rock, which covers at high water, lies 300 yards N. 63° E. (East mag.) from Furber Point.

Beacon.—This rock, which covers one foot at high water, is marked by a beacon.

Ship Dock is a small cove, around which are situated the wharves and warehouses of the principal trading firm at Burgeo; the agent's double-storied house shows conspicuously from all directions, and there is a flagstaff on the east point.

Anchorage.—The water is deep close to the wharves, but the anchoring space, in 13 fathoms water, is small, and care should be taken to avoid the small rock east of Franks Island, and the shoal water off the channel separating that island from the mainland.

White Ground (Pylades Rock), with 13 feet water on it, lies $\frac{1}{2}$ mile N. 63° E. (East mag.) of Furber Point.

Two shoals, with depths of 3 and $4\frac{1}{2}$ fathoms respectively, lie between White Ground and the rock off Furber Point.

Anchorage may be obtained off Burgeo in from 16 to 24 fathoms water, over mud, good holding ground, taking care to keep the fall of the Sandbanks open south of Furber Point, bearing S. 72° W. (N. 81° W. mag.), and Grip Head open north of Morgan Island, bearing S. 87° W. (N. 66° W. mag.), the latter mark just clearing a rock with 9 feet water over it.

Buoy.—A mooring buoy is laid down in 19 fathoms, for the convenience of trading vessels, but it should not be used by long ships, the mooring being small and the buoy only 200 yards from the rock off the N.E. point of Morgan Island.

Mercer Point, the SW. extreme of Grandy Island, is a bluff dark point forming the south point of Mercer Cove, an indentation extending 800 yards into the SW. part of Grandy Island. It consists of two basins, is crossed by a bridge and separated from Long Reach by a low neck of land. Off the entrance is a small islet, and there is shelter for small vessels in the outer basin.

The Sandbanks.—Grip Head, 152 feet high, lies $1\frac{1}{4}$ miles westward of Mercer Point. Close to the southward are the Sandbanks, 70 feet high. Sandbanks Point was formerly the southern extreme, but the southern edge of the Sandbanks has washed away about 300 yards, and there is now a passage with a depth of not more than 2 fathoms between that shore and Sandbanks Point Island.

Sandbanks Point Island lies off the SE. extreme of Sandbanks Point, now also an island; some rocks, always above water, lie south of Sandbanks Point, with $3\frac{1}{4}$ fathoms water close to them.

Beacon.—A rectangular beacon, painted white, stands on Sandbanks Point Island, and is conspicuous.

Cornelius Island, NW. about $\frac{1}{4}$ mile from Sandbanks Point, has a double summit, and is almost divided in two parts by the meeting of two coves, namely, the Harbor, available only for boats, on the north side, and Back Cove, much exposed, and containing several rocks, on the south side. Rocks and foul ground extend 150 yards from the NW. side of this island, and it should not be closed on the outer side nearer than $\frac{1}{4}$ mile.

The Boar, 14 feet high, is a round rock lying 400 yards SW. from Cornelius Island, with deep water close-to.

The Sow, 17 feet high, is 600 yards westward of The Boar, with some detached rocks close-to, and a depth of 8 fathoms at 50 yards distant.

A shoal on which the depth is $3\frac{1}{4}$ fathoms lies 350 yards S. 30° W. (S. 57° W. mag.) from The Sow. The summit of Rencontre Island, in line with the south extreme of Sandbanks Point Island, bearing East (S. 63° E. mag.), leads in 11 fathoms water 150 yards south of this shoal.

Aspect.—When first seen, the land in the vicinity of Burgeo appears gray, where denuded of the stunted trees that grow generally on the seaboard, and its outline is almost unbroken; but on nearer approach the rugged and contorted nature of the country, the innumerable hills and deep ravines, are made apparent.

Burgeo Islands form a group of almost innumerable islands and rocks, composed of Laurentian gneiss, showing white when bare, with two remarkable exceptions, namely, Round and Harbor Islands, which are composed of dark micaceous gneiss, causing them to be readily distinguished from the others.

Only the important islands will be described.

Boar Island, 201 feet high, and the northeasternmost of the group, lies about $1\frac{1}{2}$ miles SW. from Bay de Loup Point. It is divided by a marsh, the southern and higher portion is wedge-shaped, and a shoal, with 2 fathoms water over it, lies nearly 200 yards from the SE. point; and there is the same depth extending about 100 yards from the NE. point.

Light.—On the summit of Boar Island a square lighthouse, 47 feet in height, situated above the gable of a dwelling, painted white, with red roofs, exhibits a fixed red light at an elevation of 207 feet, which illuminates an arc of the horizon of 270° to seaward, and should be visible 11 miles.

Boar Island Rock covers one foot at high water, and lies $1\frac{1}{2}$ miles S. 59° E. (S. 32° E. mag.) from Boar Island Lighthouse.

Boar Island Shoal, with 5 fathoms water over it, lies about $\frac{1}{2}$ mile S. 47° E. (S. 20° E. mag.) from Boar Island Lighthouse, and has depths of from 10 to 15 fathoms close-to.

Round Shag Island, open south of Musket Islands, bearing S. 61° W. (S. 88° W. mag.), leads south of all shoals; and Richards Head, open east of Boar Island N. 43° W. (N. 16° W. mag.), leads between Boar Island Shoal and Rock.

Little Boar Island, 20 feet above high water, lies 150 yards off the NW. point of Boar Island, and there is shoal water 50 yards off in the direction of the latter.

Cuttail Island, 140 feet above high water, has bare steep slopes to the southward, and is separated from the SW. side of Boar Island by a channel 250 yards wide that should not be taken by a stranger.

Goose Island, 34 feet high, and Hug-my-dug are the north and south of a group of rocky islets to the eastward of Cuttail Island. Both are white islets, the latter square-shaped, about 40 feet above high water.

Venils Island, 165 feet high, is separated from Cuttail Island by a channel 150 yards wide, with foul ground stretching from both sides, making it unnavigable for ships without a pilot.

Anchorage.—On the SE. side is a cove 200 yards deep, affording good sheltered anchorage for small vessels, in $3\frac{1}{2}$ fathoms water.

Venils Shoal consists of two patches with $2\frac{1}{2}$ and 3 fathoms water on them, respectively, lying with the rock at the east extreme of Venils Island bearing N. 60° W. (N. 33° W. mag.), the former distant 550 yards, and the latter 700 yards.

A bank, with a depth of 8 fathoms, lies with the eastern extreme of Venils Island bearing West (N. 63° W. mag.), distant 750 yards.

Baggs Island, 160 feet high, is separated from the west side of Venils Island by a narrow shallow channel, available for boats at low water. It is a barren island with a peaked summit, and has a rock, awash at low water, off the NW. point.

Rencontre Island is the highest of the Burgeo group. The western portion is a truncated cone, 269 feet high, covered with dark foliage, and shows out very conspicuously from all directions.

Rencontre Rock, with 7 feet water on it, lies 350 yards off the SE. point of Rencontre Island.

Gull Island, 50 feet high, lying $\frac{1}{4}$ mile SE. from Rencontre Island, is a bare rock steep-to on the NE. side, but with foul ground extending 150 yards southwestward.

A rock, about 6 feet above high water, lies 150 yards north from Gull Island, and a shoal, with 13 feet water over it, between the extreme of the foul ground and Rencontre Rock.

Musket Islands are two in number, the northern and higher, 32 feet high, lying $\frac{1}{4}$ mile SSW. from the south point of Rencontre Island.

Between Musket Islands and Little Rencontre Rocks is a shoal, with 4 fathoms water over it, which is steep-to.

Little Rencontre Island is a dark conical island about 150 feet high, with a saddle-shaped summit, showing out well when seen from east or west; Little Rencontre Rocks lie about 400 yards SSE. of the island.

Crocker Island, 90 feet high, 250 yards west of Rencontre Island, is of a gray color and steep-to, except off the NW. point, from which a shoal, with 6 feet water over it, extends 50 yards.

White Island, 45 feet high, lies 350 yards W. by N. from the NW. point of Rencontre Island, and from its color is conspicuous when seen against the larger islands.

Beacon.—A pyramidal-shaped wooden beacon stands on the summit of White Island.

Morgan Island, 138 feet high, a moss-covered, undulating island, lies 1,300 yards SW. from the NW. point of Boar Island.

Off the north side shoal water fringes the coast; the west side is bold-to; the south side encumbered with rocks and shoals, and a shoal extends 50 yards off the NE. point. There are two coves on the south side, with the houses of fishermen on the shores.

A rock, with 9 feet water over it, lies 400 yards East (S. 63° E. mag.) from the NE. point of Morgan Island.

Eclipse Island, 33 feet high, is surmounted by a white-washed cairn. It is conical in shape, covered with stunted bushes, and has a low projection to the eastward, off which shoal water extends 200 yards. The passage between this and Morgan Island is clear in mid-channel.

Franks Island is flat, and nearly joined to Eclipse Island. A small rock, that covers 4 feet at high water, lies 50 yards off the east side.

There is only 6 feet water in the passage between this island and Grandy Island.

The Douglas, lying 1,800 yards eastward of the Sandbanks, covers one foot at high water, and is a small round rock, nearly always breaking.

A rock, with 10 feet water over it, lies 200 yards S. 80° W. (N. 73° W. mag.) of The Douglas, with 5 fathoms between them, and deep water in other directions.

The Baldwin consists of two rocks nearly joined, the higher about 15 feet above high water, steep-to on all sides, lying 750 yards NE. by E. of Sandbanks Point.

Baldwin Shoal, with 10 feet water over it, lies $\frac{1}{4}$ mile eastward of The Baldwin.

A rock, with 4 fathoms water over it, and 11 fathoms close-to, lies 1,150 yards S. 80° E. (S. 53° E. mag.) from Sandbanks Point Island.

Round Shag Island, 1,300 yards SW. of Musket Islands, is a conspicuous cone 64 feet high, with 10 fathoms water at 100 yards distant.

Colombier Island, conical, with a double summit, the higher 177 feet, is $\frac{1}{4}$ mile WNW. of Round Shag Island, shows prominently from all directions, and is an excellent mark for distinguishing the Burgeo Islands.

Petit Marchand, about 5 feet high, lies $\frac{1}{4}$ mile south of Sandbanks Point Island.

A rock, with 15 feet water over it, and 5 fathoms close-to, lies 600 yards eastward of Petit Marchand.

Fish Rock, awash at low water, lies 400 yards westward of Petit Marchand; between them is a shoal with 6 feet least water.

Marchand Rock, with 9 feet water over it, lies nearly $\frac{1}{4}$ mile S. 78° W. (N. 75° W. mag.) of Sandbanks Point Island.

Stern Rock, on which the depth is one foot, lies 1,200 yards N. 79° E. (S. 74° E. mag.) of the north point of Round Island.

Miffel Island, 60 feet high, the outer and southern of the Burgeo group, is composed of gray gneiss, and makes as a cone from all directions.

A rock, with 6 feet water over it, lies 135 yards from the north end; another rock, awash at low water, and having $3\frac{1}{4}$ fathoms 100 yards east of it, lies 350 yards N. 56° E. (N. 83° E. mag.) from the same point.

Fortune Rock, with $4\frac{1}{4}$ fathoms on it and deep water close-to, lies $\frac{1}{4}$ mile eastward of Miffel Island.

Whales Back, with 5 fathoms water over it, breaks in winter gales, and is the shoalest spot of some uneven ground lying $\frac{1}{4}$ mile in a westerly direction from Miffel Island. With a fresh breeze against the tide, there is a heavy sea at this place.

Green Island, nearly a mile NNW. of Miffel Island, and about 80 feet high, is a flat-topped grass-covered island, with white cliffs and deep water on the seaward face, and a small islet off the east extreme.

Green Island Shoal, with 5 fathoms water over it, and depths of 11 to 13 fathoms close-to, lies 600 yards WSW. from Green Island.

Neverfall Shoal, with 7 fathoms water over it, lies 600 yards SW. of Green Island.

Miffel Island bearing S. 69° W. (S. 42° W. mag.) clears these shoals passing southwestward; both shoals are said to break in bad weather.

Harbor Island, about $\frac{1}{2}$ mile north of Green Island, consists of numerous islets and rocks of a dark color, with steep cliffs on the north and west sides, sloping to the east, where there is a shallow cove with good shelter for boats. A remarkable hummock named The Louse-box surmounts the west point of this island.

Harbor Island Rock, 2 feet above high water, with a depth of 6 fathoms close-to, lies 270 yards SW. of Harbor Island.

Round Island, 79 feet high, of dark micaceous rock, is cliffy and steep-to, except on the NE. side, from which a ledge of 3 fathoms water extends 50 yards.

The passage between Harbor and Round Islands is free from danger, but it is better for a stranger to take the northern route.

West Flat Island, the westernmost of the group, about 25 feet high, is a bare white rock, making in two flat summits, with a rock awash at low water 100 yards off the south point, and a depth of more than 10 fathoms at 200 yards off.

Beacon.—A pyramidal-shaped wooden beacon stands on the western mound of this island.

Shoals.—Several shoals and fishing banks lie near West Flat Island. The following are those that break in winter gales:

Graley Rock, with 9 feet water over it, and 10 fathoms at 200 yards, lies 1,400 yards S. 22° E. (S. 5° W. mag.) from West Flat Island beacon.

Point Shoal, with 5 fathoms water over it, and 13 to 19 fathoms close-to, lies one mile S. 47° W. (S. 74° W. mag.) from West Flat Island beacon.

Offer Shoal, with 4 fathoms water over it, is the outer and western of these dangers, with 15 fathoms close-to, and lies $1\frac{1}{2}$ miles S. 46° W. (S. 73° W. mag.) from West Flat Island beacon.

Banks reported SW. of Burgeo.—Soundings of 10 fathoms, white sandy bottom, on a bank about 27 miles southwestward of Burgeo Islands, or in approximately latitude 47° 08' N., longitude 57° 53' W.

A bank, extending about one mile in an east and west direction, is situated about 50 miles southwestward of Burgeo Islands. At the eastern end of the bank there is a depth of 23 fathoms; about $\frac{1}{2}$ mile westward, 17 fathoms (hard, rocky bottom); and 2 miles farther westward, no bottom at 100 fathoms.

Approximate position of the 17 fathoms sounding, latitude $46^{\circ} 53'$ N., longitude $58^{\circ} 19'$ W.

Both of the above banks were unsuccessfully searched for in H. M. surveying vessel *Gulnare* in 1891.

Directions from the Eastward.—Richards Head kept between N. 82° W. (N. 55° W. mag.) and N. 51° W. (N. 24° W. mag.) will lead between Boar Island Rock and Bay de Loup Rock to Boar Island, and when about 400 yards northward of the latter the fall of Sandbanks should be brought open south of Furber Point, bearing S. 72° W. (N. 81° W. mag.), to clear White Ground and the shoals lying east of Smalls Island, after which the beacon on the shoal south of Smalls Island should be passed at about 200 yards distant, and Furber Point rounded to the anchorage.

From the Westward.—Entering Burgeo from the westward, a course should be steered to pass 800 yards north of West Flat Island, when the summit of Rencontre Island should be brought in line with the south extreme of Sandbanks Point Island, bearing East (S. 63° E. mag.), and kept so until Round Shag Island opens east of Ragged Island, bearing S. 54° E. (S. 37° E. mag.), when Sandbanks Point Island should be rounded at 200 yards distant and a N. 76° E. (S. 77° E. mag.) course steered, taking care to keep Round Island open south of Sandbanks Point Island, bearing S. 76° E. (N. 77° E. mag.), until the cairn on Eclipse Island comes in line with the NW. point of Morgan Island N. 42° E. (N. 69° E. mag.) This mark should be run on until Morgan Island is closed to 200 yards. Morgan Island should be passed at that distance until the channel between it and Eclipse Island is open, when a mid-channel course will lead to Burgeo Anchorage, looking out for the shoals extending north from Morgan and east from Eclipse Island.

In a vessel drawing more than 21 feet, Miffel Island should be steered for, taking care to keep clear of Whales Back, and rounded at $\frac{1}{2}$ mile to clear Fortune Rock, then a course steered to pass between Boar Island and Boar Island Rock; keeping Round Shag Island open south of Musket Islands, bearing S. 61° W. (S. 88° W. mag.), until Richards Head is open east of Boar Island, bearing N. 43° W. (N. 16° W. mag.); when the latter may be rounded at 300 yards, to clear the ledge off the NE. point, and the anchorage steered for.

Small vessels may pass in mid-channel, between Ragged and Seal Islands, keeping Richards Head and the church shut in with

Morgan Island, bearing N. 24° E. (N. 51° E. mag.), until Crocker Island is distant 200 yards.

White and Morgan Islands should be kept at that distance until the channel is open between the latter and Eclipse Island.

There is also a passage between Round Shag and Musket Islands; keeping one-third the width of the channel from the latter, and rounding Crocker Island at 200 yards, proceed as before directed.

Tides.—It is high water, full and change, at Burgeo at 8h. 32m.; springs rise 6½ feet, neaps rise 4 feet.

Tidal Streams.—There is no regularity in the direction of the tidal streams off Burgeo, but they are greatly influenced by the prevailing winds. The western stream attains a velocity of 1½ knots an hour after a prevalence of easterly winds, but the eastern stream seldom exceeds one knot an hour.

Coast.—**Green Island**, ½ mile NNW. of Cornelius Island and about 40 feet high, is long and narrow, with rocks extending 350 yards from the SW. side, and a rock, awash at low water, in mid-channel between it and Little Barasway Head, from which it is distant 250 yards.

No Man Rock, one foot above high water, lies 400 yards westward from Green Island; and at 900 yards on the same bearing there is a rock, with 12 feet water on it, and 7 fathoms close-to, except on its south side, where there is a depth of 4½ fathoms.

Galloping Moll Rock, covering 5 feet at high water, and nearly always breaking, lies 800 yards southward of No Man Rock.

Little Barasway is a large bay nearly all dry at low water, with First and Aaron Arms, two inlets, extending to the eastward. The entrance is nearly dry at low water, and is on either side of a conical islet, 300 yards north of Green Island.

The Canal, an artificial cutting connecting Little Barasway with Grandy Brook, is available for the small boats of the fishermen from three-quarters flood to a quarter ebb.

Flannagan Island, 33 feet high, lies about ¾ mile NW. of Little Barasway Head, has a flat top, and is faced by cliffs, with a small rock close to the east side.

A rock, that covers 2 feet at high water, with a depth of 7 fathoms close-to, lies 400 yards S. 18° E. (S. 9° W. mag.) from Flannagan Island, and a patch of rocks, with two heads covering 3 feet, lies 350 yards S. 59° E. (S. 32° E. mag.) from the same island.

Grandy Brook is an arm of the sea extending inland from Little Gut, 2½ miles to the fresh-water brook at the head; the entrance through Little Gut is now closed.

Little Gut Head, SE. of Little Gut, is the south point of a sharp-topped conical hill, 225 feet high. The rocks about this head

are white, and off it is a rock, awash at high water, with shoal water just outside.

Aspect.—There is a remarkable difference between the land west and that east of Grandy Brook; the former consists of ranges of hills with cliff-faced summits and smooth, mossy slopes; the latter of conical hills and mounds, partially covered with stunted trees or whitened by former fires.

Norman Head, west of Little Gut, is a bare-topped mound 93 feet high, with a spit of shingle extending from the base into Little Gut. West of this head extends a long shingle beach, 10 feet above high water, that forms Big Barasway, a large shoal bay containing several islands. The entrance at the west end of the beach is encumbered by rocks, and it is rarely used even by local small craft. The beach has a grassy mound at the west extreme, and two mounds at short distances to the eastward of it.

Barasway Bay, the open space bounded by Cornelius Island on the east and Barasway Point on the west, has a general depth of 17 fathoms on the outer edge, but islets, rocks, and foul ground make it quite useless as an anchorage, and in bad weather the bay appears a mass of breakers.

Mile Rocks, a cluster of islets and rocks, the highest 14 feet high, occupy a space 1,400 yards long by 800 yards broad, with rocks awash, and below water, all round at a distance of 600 yards.

A rock, with 6 feet water on it, lies 1,650 yards S. 86° E. (S. 50° E. mag.), and a shoal of 7 feet water 1,400 yards N. 52° E. (N. 79° E. mag.) from the highest of the Mile Rocks.

The Jumper, awash at low water, and always breaking, is the outer danger in Barasway Bay, and lies S. 65° E. (S. 38° E. mag.) 1½ miles from Barasway Point; nearly 800 yards N. 71° E. (S. 82° E. mag.) from the Jumper is a shoal with 18 feet water over it.

Barasway Point, the west point of Barasway Bay, is a low promontory extending seaward from the slopes of Father Hughes Hill, 398 feet high, that makes as a cone when seen from seaward, and is the end of a flat range of hills stretching to the interior. The moss and stunted growth that cover this hill are darker than the surrounding country, and tend to make it conspicuous even in misty weather.

A rock, with 6 feet water on it, lies 300 yards S. 5° W. (S. 32° W. mag.) of Barasway Point, and on the SE. side, nearly 200 yards off, is a rock that covers one foot at high water.

Doctor Harbor, with a small white island, of the same name, in the entrance, is an inlet 600 yards deep in Barasway Point, available for small vessels only.

(B. A. Chart No. 2142.)

Coast.—From Barasway Point westward the coast is foul to Connoire Bay, with several small coves. The outer rocks generally show by breakers, and may be approached on the south side to $\frac{1}{4}$ mile. The hill forming Connoire Head, completely open west of Wreck Island (the low, green island next eastward of it), bearing N. 52° W. (N. 25° W. mag.), leads westward of all dangers.

Anchorage.—Anchorage may be obtained with offshore winds off Middle Brook between Green Island (off which are a small cluster of rocks above water) and Baring Island, a reddish white rocky island, 53 feet high, next NW. of it, in 12 fathoms water, but it is quite exposed to southward and westward. A few houses stand on the western entrance point of Middle Brook, at the head of the anchorage.

(B. A. Chart No. 1586.)

Connoire Bay, entered at nearly 12 miles NW. from Miffel Island, extends $2\frac{1}{4}$ miles, with a breadth of $1\frac{1}{4}$ miles, to Mid Head, where it branches into Northeast and Northwest Arms. Northeast Arm extends in a curve $2\frac{1}{4}$ miles, and Northwest Arm $3\frac{1}{4}$ miles, but the depth of water is less than 5 fathoms over the whole extent of the latter, and at half tide boats only can enter the shallow portion, which begins at one mile from Mid Head.

Connoire Head, the eastern entrance point, is, from its isolation and the white rock at the base, conspicuous, and the dark, stunted trees that crown the summit are 175 feet above high water.

The only danger in the outer part of Connoire Bay is a rock, with 3 fathoms water over it, situated 300 yards from the east shore of the bay, and $1\frac{1}{10}$ miles from Connoire Head. Northward of Connoire Head the land slopes smoothly from hills that attain an elevation of 485 feet, and are covered with brown moss. Mid Head terminates in a series of peaked hills, and the highest part is 689 feet above high water.

Anchorage.—The bay is quite exposed to southwesterly winds, but anchorage may be obtained, with offshore winds, in depths of 10 fathoms or less, as convenient.

Northeast Arm affords good shelter to vessels drawing 18 feet or less water; anchorage being taken up by the lead and according to the size of the vessel. A sandbank extends from the north shore, just within the point where the arm narrows, and a rock, with 12 feet water on it, lies in mid-channel, off Billiard Cove, a small bight on the south shore. Vessels should, therefore, keep nearer the east than the west shore of this arm.

Water.—Water may be obtained from a good stream at the head of Billiard Cove.

Tides.—It is high water, full and change, in Billiard Cove at 8h. 40m.; springs rise $5\frac{1}{2}$ feet, neaps rise 4 feet; neaps range 3 feet.

Muddy Hole Point, the western entrance point of Connoire Bay, is the extreme of a conical hill 97 feet high, and the apparent western termination of a ridge extending from a hill with a sharp peak 246 feet above high water, which slopes northward to a salt-water lagoon. Cowhouse Hill, 839 feet high, and the highest land near the coast in this neighborhood, rises northward from this lagoon. Round Hill, 570 feet high, rises a short distance northward of Muddy Hole. Rocks extend 800 yards southwestward from Muddy Hole Point, but may be avoided by keeping the summit of Baring Island in line with the SW. extreme of Wreck Island, bearing S. 81° E. (S. 54° E. mag.).

Muddy Hole, an open bay, completely exposed to the southwestward, has a small boat cove in the NE. corner.

Anchorage.—Anchorage, with offshore winds, may be obtained in 11 or 12 fathoms water, but the holding ground is not good generally.

Otter Point.—Otter Point, the western entrance point of Muddy Hole, slopes from a round hill 137 feet high, and immediately over it there is a small cone known as Trimming Hill, 37 feet high.

Two shoals, with 3 fathoms water over them, lie in a SE. by E. direction, off the south extreme of the point, at distances of 550 yards and 800 yards, respectively.

The Painter, a dangerous rock that almost dries at low water, but often does not show by a breaker, lies nearly $\frac{1}{4}$ mile southward of Otter Point.

Shag Island, a conspicuous white rock 42 feet high, is the southernmost extreme of a chain of islands and rocks extending from Otter Point. Numerous sunken dangers lie westward and northwestward of Shag Island, the southwesternmost of which, Colombier Shoal, with 6 feet water over it, is $1\frac{1}{8}$ miles S. 68° W. (N. 85° W. mag.) from the summit of Shag Island. This danger was formerly known as Comus Rock, and the present local corruption of the name is Clumpy Shoal.

The western entrance point of Connoire Bay open south of Shag Island, bearing N. 59° E. (N. 86° E. mag.), leads southward, and the SE. extreme of Captain Island in line with the SW. extreme of Couteau Colombier, N. 9° E. (N. 36° E. mag.), leads westward of this shoal.

Otter Point Settlement, with a population of about 50, is on the north side of Duck Island, a small island at the head of a rugged bight immediately northwestward of Otter Point.

Local knowledge is necessary to approach this settlement, or the anchorage between it and the mainland northward of it, and only

vessels drawing 12 feet or less water can enter it from the eastward. The flagstaff of the settlement is the only mark on it that can be seen from seaward.

Tides.—It is high water, full and change, at Duck Island at 8h. 47m.; springs rise $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet; neaps range $2\frac{1}{2}$ feet.

Couteau Colombier, a remarkable cube of rock 49 feet high, with a low spur extending northeastward, is $1\frac{1}{4}$ miles northwestward from Shag Island. From certain positions northwestward of it, it presents a marked resemblance to a human profile.

Captain Island is remarkable for the whiteness of the rock when visible, and the darkness of the vegetation which covers the remaining portion. It has two hillocks, the northern and higher being 216 feet above high water. It is much diversified in feature, and has a conspicuous white stripe on one of the coast hills on the north shore.

Rocks and shoals extend westward 1,200 yards from this island. The passage between it and the mainland northward is only 200 yards wide, with a depth of $4\frac{1}{2}$ fathoms water in it.

Anchorage.—Small vessels will find excellent anchorage in this channel off the passage between Captain Island and Duck Island, which are almost joined together by islands and rocks, taking care to avoid Seal Rocks, one foot above high water, which lie off the mainland shore north of the passage.

Couteau Bay extends in $2\frac{1}{4}$ miles to the entrance of Couteau Brook, a considerable stream draining a large valley, which latter is a prominent feature of the coast. The bay has only one safe, though narrow, passage into it, being almost blocked by islands and rocks.

Flat Rocks, 6 and 10 feet high, respectively, and the southernmost of those above water, are surrounded by rocks for a short distance. Copper Duck Rock, with 5 fathoms water over it, lies $\frac{3}{4}$ mile S. 17° W. (S. 44° W. mag.) from the southern and lower of Flat Rocks, and is the outer danger off Couteau Bay. Connoire Head, open south of Shag Island, bearing N. 85° E. (S. 68° E. mag.), leads south, and the right extreme of the land on the west shore of Couteau Bay, open westward of the northern of Flat Rocks, bearing N. 9° E. (N. 36° E. mag.), leads westward of this rock.

Man Rock, 3 feet above high water, is $\frac{1}{4}$ mile northwestward of Flat Rocks; and Black Rock, a black wedge-shaped rock 17 feet high, lies 800 yards southwestward of Man Rock. Shoals extend southward and southeastward from Man Rock, and a shoal with 5 fathoms water on it lies 550 yards southward of Black Rock.

A rock, with 3 fathoms water over it, lies nearly in the middle of Couteau Bay, at 1,350 yards, N. 37° E. (N. 64° E. mag.), from Man Rock, and 650 yards from the west shore of the bay.

Directions.—The best and only available passage for a stranger into Couteau Bay is between Man Rock and Black Rock, and even in this passage there is a heavy swell during or after southerly and westerly gales. By keeping Baggs Head midway between the western entrance point of Couteau Bay and Black Rock (Cinq Cerf Bay), bearing N. 45° W. (N. 18° W. mag.), Copper Duck Rock will be avoided, and when Shag Roost, a conspicuous hillock 126 feet high, and faced by cliff, on the west shore of Couteau Bay, is seen midway between Man Rock and Black Rock, bearing N. 17° E. (N. 44° E. mag.), this mark should be steered for until past Man Rock, when the west shore of the bay must be kept 300 yards distant until Horses Head, a cubical black rock 13 feet high, off Otter Point, is in line with the SW. extreme of Captain Island, bearing S. 56° E. (S. 29° E. mag.), when the shoal in the middle of the bay will have been passed, and the head of the bay may be steered for.

Anchorage may be obtained in from 5 to 9 fathoms water, as convenient, guided by the lead, but a swell rolls in with southerly and southwesterly winds.

If desirous of entering the passage between Captain Island and the mainland north of it, the houses on Duck Island must be brought open north of Captain Island, bearing S. 70° E. (S. 43° E. mag.), to clear the rock extending from Gull Island, a white rock, 18 feet high, at the NW. extreme of Captain Island, before steering for the passage, which may then be entered in mid-channel, and anchorage, for small vessels only, obtained at any part of it.

Blue Hills of Couteau are two remarkable bluffs, 1,903 and 1,845 feet high, respectively, situated about 8 miles northward of Couteau Bay. Extensive ranges of hills extend both eastward and westward from them, but these, the most remarkable, are an excellent mark in clear weather for the identification of the land.

Cinq Cerf Bay lies next westward of Couteau Bay, and is encumbered with islands and rocks. The dividing point between the two bays is foul to White Ground, the outer danger, which has 2½ fathoms water over it, and is 900 yards southward of the point.

Culotte, a small cove in the NE. part of the bay, and the only anchorage, is available for small vessels.

Flat Island, 23 feet high, and the southernmost of the islands off the bay, is a bare rock 1½ miles southwestward of the dividing point between Couteau Bay and Cinq Cerf Bay. It may be approached, to 200 yards, from the SW. extreme, but shoals extend 800 yards from it in a northeasterly direction.

Black Rock, a small rock 11 feet above high water, situated 1,800 yards northeastward of Flat Island, has shoals extending in all

directions from it for 300 yards, and there is no safe passage between it and the mainland eastward of it.

Directions.—To enter Culotte, pass westward of Flat Island at a distance of not less than 400 yards, and steer to pass $\frac{1}{2}$ mile westward of Black Rock, observing that Pools Island (low and wooded, in the northeastern arm of Cinq Cerf Bay, and under Devil Head, a steep bluff 280 feet high, that forms the east entrance point to Culotte) just open west of the east shore of Cinq Cerf Bay, bearing N. 40° E. (N. 67° E. mag.), leads close west of the shoals off Black Rock. Steering with Pools Island open, when approaching the east shore of the bay, keep it at the distance of about 200 yards and pass between that shore and Seal Rocks (a cluster of flat rocks 8 feet above high water, situated to the southward of a peninsula surmounted by two hills, 115 and 117 feet high, respectively, that forms the west entrance point to Culotte). Pass in mid-channel between Woody Island, which is separated by a narrow channel from the east extreme of the peninsula, and Pools Island, and anchor in from 6 to 8 fathoms water, muddy bottom, and good holding ground.

Water may be obtained from a brook at the NE. corner of Culotte, and wood is abundant.

Baggs Head is a conspicuous dark wooded cone 188 feet high, in the middle of the north shore of Cinq Cerf Bay.

Numerous islands and shoals extend southward of it, but the outermost will be cleared by keeping Woody Island open east of Seal Rocks, bearing N. 44° E. (N. 71° E. mag.).

There is a white patch on the side of the coast hill, at $\frac{1}{2}$ mile northeastward of Baggs Head, which is prominent for a distance of 3 miles.

Cinq Cerf Brook discharges the waters of a considerable stream, which runs from many miles inland, in a deep valley, close westward of Baggs Head; it contains usually both salmon and trout.

(B. A. Chart No. 2142.)

Cinq Cerf Islands are a group of islands lying off the west entrance point to Cinq Cerf Bay, with steep gray cliffs on their seaboard. The highest and westernmost is 84 feet above high water, while Shag Island, the northeasternmost, is a bare white rock 26 feet high. A small village, with a population of 34 in 1884, is situated round a cove on the mainland shore, close north-westward of these islands.

Big Sunker, with 15 feet over it at low water, and the south-westernmost of a group of rocks lying off Cinq Cerf Islands, lies a little more than one mile N. 74° W. (N. 47° W. mag.) from Flat

Island. Shag Island, completely open south of Flat Island, bearing S. 81° E. (S. 54° E. mag.), leads south; Baggs Head well open east of Shag Island (Cinq Cerf), N. 6° E. (N. 33° E. mag.), leads east; and Baggs Head open westward of Shag Island (Cinq Cerf), N. 25° E. (N. 52° E. mag.), leads westward of this dangerous rock.

Whittle Hill, 333 feet high, is a round hill situated on the mainland a short distance northwestward of Cinq Cerf Islands.

Three Islands are a cluster of that number with two lower islets eastward of them, and several rocks and shoals round them. The southernmost and highest is a round gray rock 46 feet above high water. In approaching Grand Bruit Harbor the dangers off these islands may be avoided by keeping Pigeon Island bearing S. 88° W. (N. 65° W. mag.).

Bad Neighbor, a dangerous rock nearly awash at low water, is 1½ miles S. 14° E. (S. 13° W. mag.) from the southernmost of Three Islands. Roti Colombier in line with Offer Island, bearing West (N. 63° W. mag.), leads south; the High Land of Grand Bruit well open eastward of the highest of Three Islands, N. 14° W. (N. 13° E. mag.), leads close east; and open west of that island, N. 11° W. (N. 16° E. mag.), leads close westward of this rock.

Chance Rock, with 4½ fathoms water over it, lies about ½ mile S. 75° W. (N. 78° W. mag.) from Bad Neighbor.

The High Land of Grand Bruit forms one of the most remarkable hills and best landfalls on the coast. It rises in a steep cliff to an elevation of 1,012 feet, and is surmounted by a cairn of stones, at a little more than 2 miles northeastward of Grand Bruit Harbor. Rocky and serrated ranges extend inland for several miles.

A cascade falls over the hills nearly one mile westward of the High Land.

Grand Bruit Harbor is only 200 yards wide, but affords excellent sheltered anchorage for small vessels in 7 fathoms water. A series of rocks extends 400 yards SSE. from the west extreme of the island, which forms the east entrance point. There will be no difficulty in recognizing this harbor, as the houses of the village surrounding, and a schoolhouse painted white, on the slope of the hill above, or the large waterfall at the head of the harbor, may be seen from seaward.

The Smoker, an isolated rock 10 feet high, lies southeastward, and a group of islands lie southwestward of the entrance to the harbor.

Southeast Island is a gray, bare islet 40 feet high, and White Island at the NE. extreme is a steep, round islet 35 feet high. Harbor Island, the largest of the group, is so named from two boat coves on either side of a narrow neck of land in the middle of the island. It falls in gray cliff from the summit 105 feet high over the south extreme.

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Duck Island shelters the northern boat cove, and from its north extreme rocks extend 200 yards. Pigeon Island is a rugged rock 24 feet high.

Grand Bruit Colombier is a conspicuous small cone about 35 feet high, lying 900 yards southward of the group off the harbor. A rock that dries about 2 feet at low water lies 650 yards northeastward, and a sunken rock 200 yards southeastward, of Grand Bruit Colombier.

Offer Island, 22 feet above high water, is the southernmost islet off Grand Bruit Harbor, and has no danger off it farther than 200 yards.

Hares Ears are two sharp peaks, 120 feet high, immediately over the extreme of the mainland southwestward of Grand Bruit Harbor.

Tides.—It is high water, full and change, in Grand Bruit Harbor at 8h. 43m.; springs rise $5\frac{1}{2}$ feet, neaps rise 4 feet.

The Barasway, a large bight westward of Hares Ears, is almost filled with islands and rocks, and the passage between them should not be attempted without a local pilot.

Flat Island, open southward of Offer Island, bearing N. 75° E. (S. 78° E. mag.), will lead southwestward of all dangers.

Old Man Hill, $1\frac{1}{2}$ miles northward of The Barasway, is a peaked hill 684 feet high and faced by cliff. For about two hours near noon, when the sun is shining, the shadow of the cliff forms a curious resemblance to the figure of a man in the face of the hill.

(H. O. Chart No. 661^b.)

Rôti Colombier is a conspicuous bare conical rock 62 feet high at the south extreme of the islands off The Barasway.

Ireland Island, 3 miles in a westerly direction from Rôti Colombier, lies a little more than one mile off the east point of the entrance to La Poile Bay; a ledge extends more than 600 yards from the SE. point of this island, with $1\frac{1}{2}$ fathoms water at the extremity.

La Poile Bay extends about 6 miles NNE., with a general breadth of $1\frac{1}{2}$ miles, to North Bay Point and Dolman Head, which divide it into Northeast Arm and North Bay, the former $3\frac{1}{2}$ and the latter $2\frac{1}{2}$ miles long. The several anchorages in the bay will be described hereafter.

Light.—The lighthouse on Ireland Island is a cylindrical iron tower, 39 feet in height, with dwelling attached, and painted red and white in horizontal stripes; it exhibits, at an elevation of 67 feet, a revolving white light every twelve seconds; it should be visible 9 miles.

Naked Man Rock, which dries 3 feet at low water, lies 1,300 yards N. 23° W. (N. 4° E. mag.) from Ireland Island lighthouse.

Rocks.—A sunken rock, with a depth of less than 6 feet on it, and on which the sea breaks, is situated with Ireland Island lighthouse bearing about S. 12° E. (S. 17° W. mag.), distant 880 yards.

A sunken rock, with a depth of 2½ fathoms on it and 4 to 5 fathoms close around, lies 200 yards from the above sunken rock, on the same bearing.

• Southeast Rock lies 600 yards N. 54° E. (N. 81° E. mag.), and a shoal with 2½ fathoms water over it, 400 yards N. 2° E. (N. 29° E. mag.) of the lighthouse.

A sunken rock, with a depth of 2 fathoms on it, lies with Ireland Island lighthouse bearing about S. 60° W. (S. 87° W. mag.), distant 2½ miles.

A rock about 12 feet high, having a rock, with less than 6 feet water over it, close SW. of it, lies ½ mile N. 46° E. (N. 73° E. mag.) of Naked Man Rock, and between these and the eastern entrance point there is foul ground.

Gallyboy Harbor, a narrow boat creek having a rock, with 6 feet water over it, in mid-channel, is 2½ miles from the entrance on the east shore.

Friar Rock, awash at low water, lies 250 yards off the south point of Sandy Cove, on the east shore ¾ miles within the entrance.

Dolman Cove lies between Northeast Arm and North Bay, and is an open bight west of Dolman Head, which is a steep bluff, 770 feet high.

Northeast Arm affords excellent anchorage in from 10 to 13 fathoms water, over mud, in a space ¼ mile long and 600 yards broad, and there is no danger in the entrance nor in the arm.

Water.—Water may be obtained from Rattling Brook, near the head.

North Bay is shallow from the entrance, but anchorage may be obtained just outside in 12 fathoms water, over gravel. A telegraph wire crosses the head of North Bay.

Bennet Rock, with 12 feet water over it, lies 400 yards ESE. of Vineyard Islet, a small islet off the north point of Broad Cove, 2½ miles from Little Bay.

Little Bay, on the west shore, 3 miles from the entrance, is 1½ miles deep, and affords anchorage in a space, 400 yards in diameter, off the fishing settlement in 10 fathoms water. Buoys are laid down for convenience of warping vessels to the wharves.

Tooth Rock.—A sunken rock, with a depth of 2½ fathoms on it and 5 to 10 fathoms close around, lies at the entrance of Little Bay, with Gallyboy Head 1½ miles N. 86° E. (S. 67° E. mag.).

Anchorage.—Anchorage may be obtained off the mouth of this bay in 15 fathoms water, exposed to southerly winds, but Tooth Rock interferes with the anchoring space.

A shoal, with $6\frac{1}{2}$ fathoms water on it (existence doubtful), is reported to lie in this harbor.

Beacon.—A small iron beacon surmounted by a staff and cage is placed on the outer rock off the south entrance point to Little Bay. Shoal water extends a few yards outside the beacon.

Communication.—The Coastal Steamship Company's steamer calls here fortnightly during summer and autumn, and there is a post and telegraph office.

Ice.—Little Bay freezes occasionally in the month of February, but the ice seldom remains long.

La Poile Harbor, just inside the west point of the entrance, is 400 yards wide, and 1,700 yards deep as far as Pig Island, which lies in mid-channel; beyond Pig Island it is continued to the head for another $\frac{1}{2}$ mile by a narrow bight.

There are a few houses on the south shore of this harbor, and anchorage may be obtained, in 11 fathoms water, about 300 yards northeastward of Pig Island.

Beacon.—A beacon stands on Beacon Point.

Harbor Rock, with 10 feet water over it, is the extreme of a shoal extending nearly 200 yards from the south shore, just within the entrance, and 400 yards NNW. of Beacon Point. To avoid this rock, the north shore should be kept aboard when entering.

Cox Rock, with 9 feet water over it, lies 600 yards off the west point of the entrance to La Poile Bay, $2\frac{1}{2}$ miles west (N. 63° W. mag.) from Ireland Island lighthouse.

La Plante Harbor, a narrow boat creek near the entrance, may be entered by keeping the east point close aboard, to avoid a rock just inside the mouth.

Ice.—La Poile Harbor freezes over about 10th February, the ice disappearing about 20th March; although blocked at intervals, generally between the 1st and 20th March, during fifty years navigation has not been impeded more than six spring seasons, and field ice rarely arrives, but when forced in by SW. winds becomes a serious obstruction; the bay is cleared by NW. winds. The ice in the river is generally about 6 inches thick.

Tides.—It is high water, full and change, in La Poile Bay at 9h. 0m.; springs rise 6 feet, neaps rise 4 feet.

Little La Poile, a narrow shallow inlet, extends west of La Poile Bay.

(B. A. Chart No. 2336.)

Coast.—Between La Poile Bay and Garia Bay the coast is bordered by islands and rocks, which no stranger should attempt to

pass inside of at any time, nor shoal the water to less than 50 fathoms at night.

Garia Bay, entered 4 miles westward of La Poile Bay, extends 3 miles in a northwesterly direction, and thence with a bend northeasterly for 2 miles. The water in it is generally shallow, and the anchorage space for large vessels is only 300 yards wide, but for small vessels it affords excellent shelter.

Crafty Head, 140 feet high, and Black George Head, 141 feet high, are two conspicuous conical headlands, between Little La Poile and Garia Bay. Behind these the ranges gradually increase in height to an elevation of 860 feet, over the east side of Garia Bay, while at 4 miles northward of the head of that bay are the Blue Hills of Garia; the highest, Garia Peak, is 1,814 feet above the sea.

Wood, suitable for building fishing craft, grows in Garia Bay.

Indian Island, 58 feet high, lies off the eastern entrance point of Garia Bay, and may be distinguished by a white cliff at the west extreme.

Deer Island, dividing the entrance, is surmounted by a conical hill 68 feet above high water, and covered with dark spruce. From it islands and rocks extend southeastward $\frac{3}{4}$ mile, the most prominent being Shag Island, the easternmost, which is 32 feet high, and composed of gray rock, and Black Rock, the southernmost, 12 feet high.

Smock Island, 53 feet high, and composed of gray rock partially covered with moss, lies just inside the entrance of Garia Bay; the shores are foul for a short distance. Ship Cove Hill is a remarkable headland, 155 feet high, on the eastern shore, and off it is Big Island, 114 feet high. Spruce Island, 52 feet high, is joined by rocks to the western shore, and Round Island, 72 feet high and the next north, is separated from the western shore by the deepest available channel to the head of the bay.

A group of islets, westward of Deer Island in the western entrance to Garia Bay, are known as Big Rock, Bell Rock, and Flat Rock, from their shapes. The north shore of Deer Island generally is foul; three of the rocks, the Bull, the Calf, and the Cow, showing only at low water, spring tides.

Brag Rock, with 2 feet water on it, lies 66 yards eastward of Flat Rock.

The settlement is in Garia Harbor, a small cove with numerous rocks in it, on the west side of Garia Bay just inside the entrance, and one family resides at the head. The population was 53 in 1884. The schoolhouse is the northeasternmost house, and stands on a small eminence above the other houses.

Wreck Island lies about $\frac{1}{4}$ mile southwestward of the entrance to Garia Bay, is 35 feet high, and covered with grass. There are two rocky mounds near the west extreme. Wreck Island Sunkers are rocks that extend nearly $\frac{1}{4}$ mile southward of Wreck Island, and Offer Gob Rock, a dangerous shoal with 15 feet water on it, lies $\frac{1}{4}$ mile S. 26° W. (S. 53° W. mag.) from Wreck Island Summit.

Hatchers Cove, a small bight completely exposed to the southward, lies close westward of the entrance to Garia Bay. The eastern part of the cove is full of rocks, but there is good anchorage for small craft in the remainder, in from 6 to 11 fathoms water.

There is a small black rock off the eastern entrance point, and one that dries only at low water close to the western entrance point.

Little Garia Bay is close westward of Hatchers Cove, the dividing points being Pool Island and Slammer Point, which has the appearance of an island. It may be recognized by Firmage Head, a remarkable bluff, 180 feet high, just within the eastern entrance point. There is no danger in this bay at any distance from the shore, but the water is deep, and it is completely exposed to southerly winds. A bar, with not more than 12 feet over it at low water, and composed of flat rock, crosses the bay $\frac{1}{4}$ mile from the head, forming a basin with $4\frac{1}{2}$ fathoms in it, and a good anchorage for small craft. Large vessels will find sheltered anchorage from offshore winds in 13 fathoms water off Pigeon Island, 40 feet high, close to the west shore, and just north of Pillar Rock, 35 feet high. Berry Point, the west entrance point, is a low peninsula of red cliff, with a small rock above water close south.

Seal Islands are a group off the western entrance point to Little Garia Bay.

Big Seal Island, surmounted by a sharp pointed hill 130 feet high, is generally covered with grass and moss. Close NW. of it is Round Island, a sharp cone about 70 feet high, and south of it, Offer Seal Island, 54 feet high, with Black Rock, 6 feet above high water, close south of it.

Rocks extend from all sides of Offer Seal Island except the north, and a shoal named Edge-of-ground, with 15 feet water over it, is situated 800 yards S. 40° E. (S. 13° E. mag.) from the east extreme of Offer Seal Island.

Gob Rock, awash at low water, lies a short distance from the NE. extreme of Big Seal Island. Sunken dangers fringe the north shores of Big Seal and Round Islands, and a rock, awash at low water, lies off the passage between these islands.

Seal Island Head, a conspicuous red bluff 55 feet high, westward of Seal Islands, shelters a small cove eastward of it, in which small vessels may anchor in 7 fathoms water, in a space about 200 yards in diameter.

The entrance is from the eastward, and north of Big Seal Island. Vessels must keep close to the northern or mainland shore to avoid the rocks off Round Island, as the passage is only 65 yards wide. There is a small settlement here that contained 73 persons in 1884.

Coast.—The coast westward of Seal Islands is bordered by rocks and shoals, and strangers should not venture north of the line of Wreck Island, in line with Black Rock (Seal Islands), bearing N. 70° E. (S. 83° E. mag.).

Bennett Cove, just westward of Seal Island Head, affords refuge for small craft, but it is barred from the southward by rocks, and the only approach is from the westward by keeping about 65 yards from the mainland.

Bay Le Moine, entered 5 miles westward of Garia Bay, extends 4 miles in a northeasterly direction, and has good anchorage at the head.

Petites is a considerable settlement situated round the basins formed by a group of islands and rocks at the eastern entrance point of Bay le Moine.

These basins are suitable for small vessels only, which moor to the wharves, and local knowledge is required to pilot them in safely.

Black Rock, the southernmost of the group and 4 feet high, lies just south of Gull Island which is 33 feet high, and covered with grass over red rock.

Black Rock Shoal, with 3 fathoms water on it, lies nearly 400 yards southwestward of Black Rock, and Major Rock, with 6 feet water over it, lies 600 yards N. 68° W. (N. 41° W. mag.) from the summit of Gull Island. This is a dangerous rock, as it does not often break, being only a very sharp pinnacle, with deep water close round it.

Fish Head, a steep bluff at the SW. extreme of a hill, 231 feet high, and faced by gray cliff, forms the western entrance point of Bay le Moine.

The Friar, an isolated stone pillar, stands a short distance north-eastward of it.

Dublin Cove, sheltered by the coast northward of Fish Head, is 335 yards wide at the entrance, and narrows gradually to the head.

Dublin Cove Rocks, 2 feet high and small, are always visible by daylight, and may be approached to 100 yards.

There are no other dangers in this cove, except close to the head where it is shallow.

Anchorage.—Good anchorage may be obtained in Dublin Cove, for small vessels as convenient, in from 22 fathoms, at the entrance, to 6 fathoms water off a small islet at the head.

The Red House, a conspicuous rock, 30 feet high, and faced by red cliff, lies close to the shore northeastward of Dublin Cove, and at one mile farther, on the same side, is a waterfall just westward of a red point, from which latter a shoal extends a short distance.

Bay le Moine Rock, with 4 feet water over it, lies 800 yards S. 17° W. (S. 44° W. mag.) of the Red House, and nearly in the middle of the bay.

Water.—Water may be procured from the fall or the streams at the head of the bay at high water.

Harbor le Cou lies west of the entrance to Bay le Moine, and is divided into a cove at the SW., and a basin at the NE. end.

Shark Cove Head, close eastward of the entrance, is surmounted by a conspicuous sharp hill, 160 feet high, and the Sugarloaf, a conical hill, 220 feet high, and covered with dark spruce, surmounts the turning point to the basin.

Calapoose Rocks, 3 feet high, lie nearly in the middle of the approach, and have a shoal, with 12 feet water on it, lying nearly 200 yards SSE. of them, which may be avoided by keeping Sugarloaf Point open westward of Calapoose Rocks, bearing N. 48° W. (N. 21° W. mag.); with the exception of this shoal there are no other dangers in the entrance except close to the shore.

The settlement is situated round the SW. cove, and contains a schoolhouse. In 1884 the population was 222.

Anchorage.—The cove, $\frac{1}{2}$ mile deep, and 300 yards wide at the mouth, affords anchorage for small vessels in from 8 to 11 fathoms water.

Some rocks lie close to a small hillock, on the north side, and a rock, that dries at low water, lies in the middle of the head of the cove.

The basin, $\frac{1}{2}$ mile in diameter, with 20 fathoms water, is generally deep to the shore, but a spit extends a short distance from the small islet, on the north side of the entrance, and some rocks lie a short distance from the bluff at the NE. end.

The Barasway, a shallow inlet, extends northward from the basin, and has a waterfall at the head.

Rose Blanche Point (said to be a corruption of Roches Blanches) may be readily recognized by the lighthouse. The coast between it and Harbor le Cou is of a whitish gray rock, and generally steep. Wash Rocks, that cover at high tide, lie a short distance from the coast midway between the point and Harbor le Cou. Black Rock, 11 feet high, is the SW. extreme of a line of rocks off Rose Blanche Point.

Black Rock Sunker, with 7 feet water on it, lies 200 yards south of Black Rock.

Light.—On the eastern head of Rose Blanche Point there is a granite lighthouse, 40 feet in height, surmounting the corner of slate-roofed buildings, with their SE. sides painted red and white in vertical stripes. It exhibits, at an elevation of 95 feet, a fixed white light, that should be visible 11 miles, between the bearings N. 62° E. (N. 80° E. mag.) and S. 73° W. (N. 80° W. mag.), over an arc of 169°.

Directions.—Proceeding westward from La Poile, Black Rock off Little La Poile must be given a berth of $\frac{1}{4}$ mile, and the south extreme of Big Seal Island kept well open southward of Wreck Island, bearing S. 84° W. (N. 69° W. mag.), to clear Tinker Rocks, the outer dangers of this neighborhood.

Eastern Channel.—If bound to Garia Bay, when Smock Island is entirely open westward of the eastern entrance point of that bay, bearing N. 45° W. (N. 18° W. mag.), the entrance may be steered for, and mid-channel kept between the low reef at the northeastern extreme of Deer Island and the eastern entrance point. Steer for Smock Island, with its SW. extreme bearing N. 54° W. (N. 27° W. mag.), until the schoolhouse in Garia Harbor is shut in with the north entrance point of the harbor bearing S. 86° W. (N. 67° W. mag.), when the shoals off Deer Island will have been passed, and a course may be steered to round westward of Smock Island, and anchorage taken up in 10 fathoms water, midway between it and a cove in the mainland lying north from it. This passage, being but 100 yards wide in the entrance, and having no more than 21 feet water in it, is suitable only for small vessels.

Western Channel.—Large vessels entering Garia Bay should continue on the mark, the south extreme of Big Seal Island open southward of Wreck Island, until the northern entrance point of Garia Harbor, a small bluff, is in line with Bell Rock, bearing N. 12° W. (N. 15° E. mag.), when the channel between Deer Island and Bell Rock may be steered for, taking care to open the whole of Smock Island, westward of Deer Island, N. 4° W. (N. 23° E. mag.), before passing Black Rock, to clear Sculpin Rock, the westernmost of the dangers, south of Deer Island. When Shag Island is abeam, bring the northern entrance point to Garia Harbor to bear N. 17° W. (N. 10° E. mag.) and steer for it, to clear Brag Rock, and after passing Flat Rock, Black Rock must be kept its own breadth open westward of Deer Island, bearing S. 29° E. (S. 2° E. mag.), to avoid The Bull. The entrance points of Garia Harbor may then be steered for, and passed at about 100 yards distant, and the anchor let go in the place previously described.

The navigation beyond this is intricate for large vessels, and the absence of leading marks makes a written description unavailable.

Small vessels may continue between Spruce and Big Islands, then in the channel between Round Island and the mainland westward of it, then for one mile in the direction of the waterfall, and then for the narrows.

From the Westward, through the Western Channel, Black George Head must be kept open east of Black Rock, bearing N. 39° E. (N. 66° E. mag.), to clear Wreck Island Sunkers until the north entrance point of Garia Harbor is in line with Bell Rock, when proceed as before.

Through the Eastern Channel. After passing Wreck Island Sunkers, as above, the south extreme of Big Seal Island must be kept open south of Wreck Island, until the entrance points of the eastern passage are open, bearing N. 26° W. (N. 1° E. mag.), when the entrance may be steered for, and former directions followed.

Proceeding westward from Garia Bay, Black George Head must be brought open east of Black Rock, bearing N. 39° E. (N. 66° E. mag.), and kept so until Seal Island Head is in line with the north extreme of Offer Seal Island, bearing N. 71° E. (N. 44° E. mag.), to clear Wreck Island Sunkers and Offer Gob Rock, which will be passed when the west entrance point of Garia Bay is seen between the two hummocks, at the west extreme of Wreck Island, bearing N. 25° E. (N. 52° E. mag.). If bound to Little Garia Bay or Seal Islands, the course is then without danger, except the rocks close to Seal Islands.

Proceeding westward, Shag Island must be kept open southward of Wreck Island, bearing N. 53° E. (N. 80° E. mag.) until Seal Island Head is open westward of Black Rock (Seal Islands), bearing N. 43° W. (N. 14° W. mag.) to clear the shoals off Seal Islands, when a course may be steered for Rose Blanche Point lighthouse.

When approaching Petites, Seal Island Head must be kept open south of Winging Island, the southernmost of the group, off that place, bearing N. 63° E. (east mag.), until the Red House is open west of the south shore of Bay le Moine, bearing N. 22° E. (N. 49° E. mag.). A course must then be steered to shut in the waterfall on the north shore of the bay, with the point SW. of it, bearing N. 28° E. (N. 55° E. mag.), to clear Major Rock.

After passing the north entrance point of Petites, the waterfall must be brought well open of the point SW. of it, bearing N. 25° E. (N. 52° E. mag.), to avoid Bay le Moine Rock, and when abreast the Red House all danger is passed, and anchorage may be obtained at the head of the bay, in 14 fathoms, or less water as convenient, remembering that the water shoals very rapidly from 5 to 3 fathoms.

To enter Harbor le Cou, Sugarloaf Point must be brought open west of Calapoose Rocks, bearing N. 48° W. (N. 21° W. mag.), when a mid-channel course will lead to either part of the harbor.

Tides.—It is high water, full and change, in Garia Harbor at 8h. 50m.; springs rise $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet; neaps range 2 feet.

Coast.—From Rose Blanche Point the shore trends NNE. $\frac{1}{2}$ mile, then turning west and SW., it forms, with two small bays at its head, Rose Blanche Harbor. Immediately facing the shore inside the point, and almost connected with it by rocky islets, is Cains Island, westward of which is the entrance to the harbor. The island is steep to off its SW. point and along its western side. On its eastern side, where it is separated from the shore by a narrow bay (almost a strait), there are a few houses and fishing stages.

Rose Blanche Harbor is tolerably easy of access and affords sheltered anchorage in from 8 to 9 fathoms water, over a sandy bottom, but the space is very confined and a vessel of over 200 feet in length should moor.

Rose Blanche Village, principally situated on the peninsula which forms the western side of the harbor, has a population of about 500, all of whom are, directly or indirectly, dependent on the fishing industry. There is a church, the spire of which forms a prominent mark when approaching from the westward, a school, and a resident medical officer.

Supplies.—Supplies of ordinary descriptions can be obtained, and good water is easily procured from the mouth of a river in the next large bay to the westward.

Communication.—Communication is maintained with St. Johns and other ports along the coast, during summer, by a steamer fortnightly, and there is telegraphic communication with these places and the Dominion of Canada. Nearly all intercourse between the villages is by water, as there are no roads, with the exception of one from Rose Blanche to Harbor Le Cou.

Ice.—Rose Blanche occasionally freezes with thin ice, but when gulf ice is pressed in by SW. winds it becomes a serious obstruction.

Rose Blanche Shoals comprise several rocky heads lying southward of Rose Blanche Point. The outer one, which lies nearly a mile S. 40° W. (S. 67° W. mag.) from the lighthouse, has over it a least depth of 2 fathoms, and to the northward are four other patches with less than 3 fathoms water over them, all of which break heavily.

Shag Rocks, lying $1\frac{1}{2}$ miles N. 54° W. (N. 81° W. mag.) from Rose Blanche Point, form a group of rocky ledges, the highest of which is 17 feet above high water. To the southeastward of this are some rocks which dry 5 feet, and beyond these, 400 yards from the highest ledge, there is a rock with $2\frac{1}{2}$ fathoms over it. At 600 yards N. 40° E. (N. 67° E. mag.) from this rock is a ledge on

which the depth is from 2 to 3 fathoms. All these break heavily in any swell, but they are steep-to and in calm weather should be approached with caution.

A little over 400 yards in a north northwesterly direction from the highest Shag Rock there is another patch having over it one fathom water; it is composed of white rock which is distinctly visible when a short distance away.

Duck Island, 60 feet high and covered with coarse grass, lies between Shag Rocks and the shore; eastward of it there are several rocky heads, making the channel between it and Duckling, the small islet inside, very dangerous at high water, when they may not be visible. Off the west end of Duckling there is a rocky shoal with a least depth of 10 feet, but between the two, very close to the islet, there is a deep channel used by the coasting steamers. The north side of Duck Island is tolerably steep and clear of danger.

Butter Pot, a conspicuous flat-topped hill near the head of Otter Bay, open south of Tinker Island, bearing N. 81° W. (N. 54° W. mag.), clears Shag Rock and Rose Blanche Shoals.

Hopkins Island, lying inside Duck Island and fronting a deep bay locally known as West Arm, is 89 feet high and of the same rocky, sterile nature as the neighboring coast, from which its northern point is separated by a shallow passage 150 feet wide. Together with the main shore this island forms, on its western side, a bay, the shores of which are steep-to; the water is deep, but there is no shelter from the SW. winds and swell which frequently prevail.

West Arm, nearly 1,200 yards deep, affords anchorage for small vessels in 5 to 6 fathoms water, over rocky bottom. Its entrance is contracted by Bell Rock (between which and the Rose Blanche Peninsula there are several ledges), and farther in by Goose Island, a small rocky islet, having southward of it several rocky patches.

Rose Blanche Brook, a stream of moderate size, flows into the head of West Arm.

Directions for Rose Blanche Harbor.—From the westward: Butter Pot Hill kept open south of Tinker Island, bearing N. 81° W. (N. 54° W. mag.), will clear Shag Rocks and Rose Blanche Shoals, and when Bell Rock is just open of the west extreme of Cains Island, bearing N. 7° E. (N. 34° E. mag.), a course may be shaped for the harbor, care being taken that Bell Rock is only just seen open. After passing the north point of Cains Island, the shores of which are steep-to, anchorage may be taken up as convenient. Coming from the eastward it will be well to give the lighthouse a berth of $\frac{1}{2}$ mile to clear Black Rock Sunker, off Rose Blanche Point, and when Goose Island opens of Cains Island

about N. 8° W. (N. 19° E. mag.), the course may be shaped as mentioned above.

Tides.—It is high water, full and change, at Rose Blanche at 8h. 40m.; springs rise 4½ feet, neaps rise 3½ feet.

Tidal Streams.—The flood and ebb streams, running almost west and east, are quite perceptible close in to the shore, but during the survey of this part of the coast, in spring and autumn, the stream outside the 20-fathom line was nearly always to the westward.

Coast.—From inside Hopkins Island the coast trends, generally, to the westward to a bluff point forming the eastern side of the entrance to Mull Face Bay. Off this point a rocky ledge begins, and extends in an easterly direction, toward Duckling Islet, for a distance of 800 yards. Near its east extreme there are some small rocks which dry at low water, which make a good mark for the northern limit of the channel inside Duck Island. Between this island and the bluff point mentioned above there are two rocks, having over them 3 and 8½ fathoms water.

Yankee Rocks form a cluster of rocks and ledges, the highest of which is 11 feet above high water. They lie immediately west of the entrance to Mull Face Bay, and 200 yards N. 84° E. (S. 69° E. mag.) from the highest part there is a pinnacle rock which dries at low water.

Mull Face Bay, an arm of the sea nearly ¼ mile long, is contracted, near the middle of its depth, to a width of little more than 100 yards, inside which it opens out to a basin affording sheltered, but very confined, anchorage to small vessels, in 4 fathoms water. The entrance between the cliffs on the western side (which should be kept close aboard) and the shoals extending from the eastern point is only about 200 feet wide, but with local knowledge there is no danger.

Coast.—The coast from Mull Face Bay trends generally in a westerly direction to Barasway Bay, which is much encumbered by rocks and shoals. In its NW. corner there is a conspicuous waterfall, formed by a stream which flows from several large ponds between the hills.

Green Island, lying off the eastern point of Barasway Bay, with deep water between, is 21 feet high, and being covered with grass, forms a rather prominent feature. Outside it, to the SE. and SW., there are several rocks and ledges which generally break; of these, the southeastern rock, with 10 feet water over it, lies 1,200 yards S. 50° E. (S. 23° E. mag.), and the western rock, with 6 feet over it, 700 yards S. 28° W. (S. 55° W. mag.) from the summit of the island. There is also a ledge of 2 to 3 fathoms water, extending 550 yards in a westerly direction from the island.

Butter Pot Hill open south of Tinker Island, bearing N. 81° W. (N. 54° W. mag.), leads outside these shoals.

Coast.—The coast from Barasway Bay, trending still in a general westerly direction and fairly steep-to, is cliffy for $\frac{1}{4}$ mile to White Head, a conspicuous mark from seaward. At $\frac{1}{4}$ mile westward of this the shore is fronted by a group of small islands, inside of which there is a fishing village named Bazel. Between the islands and the shore there is a narrow passage, having in it from 3 to 4 fathoms water.

Tinker Island, the westernmost of the group, 20 feet high and composed of large blocks of shale and granite, is quite bare of vegetation; on the summit there is a single block of shale standing at an angle of about 45°. At $\frac{1}{4}$ mile outside this island there is a dangerous rock with 9 feet over it at low water. Rose Blanche lighthouse kept open south of Duck Island, bearing N. 77° E. (S. 76° E. mag.), leads 700 yards outside this rock.

Pigeon Island, nearly 1,200 yards westward of Tinker Island, is 23 feet high, and rocky and barren like the neighboring shore. Off its south side there is a small rock having over it 2 fathoms water.

Coast.—Between Tinker and Pigeon Islands the mainland recedes, forming a bay nearly $\frac{1}{4}$ mile deep, but it does not afford anchorage. Westward of Pigeon Island there is another bay, fronted by a group of small rocky islets, and, a little farther west, a group of islands, the highest of which is 48 feet above the sea, fronts the entrance to a narrow channel known as Milners Tickle, leading into Grandy Sound. Half a mile farther to the westward is Grandy Passage.

Pigeon Island Shoals comprise a cluster of rocky patches, some of which dry at low water, lying to the westward of Pigeon Island; the outer patch has 4 fathoms water over it, and is steep-to on its southern and western sides.

Black Rock is a small rocky islet, 20 feet high, lying off the entrance to Grandy Passage, for which it is a good mark. To the SE., south, and SW. of it there are several rocks and ledges, two of which, at nearly 600 yards distant, in a southeasterly direction, dry at low water. At 265 yards to the southwestward of Black Rock there is a rocky head with only 4 feet water over it, and 400 yards outside this there are two patches of $4\frac{1}{2}$ fathoms, both of which break heavily with a swell from seaward.

Grandy Passage is close to the westward of Black Rock, between it and a group of rocks and ledges lying off the SE. point of Harbor Island. There are two small rocks in the passage, one close off Grandy Head, and one a little farther out, and though in the channel there is good water, these rocks, together with those

off the entrance, make it a dangerous place for a stranger to attempt without a pilot.

Harbor Island is the largest of a group of islands and ledges which front the coast in this locality. Together with Baker Island and some others, it forms the sheltered anchorage named Grandy Sound. These islands are of moderate height, and some of them are covered with grass, on which a few sheep, belonging to the villages in the vicinity, are left to feed. One of these villages, consisting of five or six houses, is situated on a small island just within the passage above mentioned.

Westward of Harbor Island there is a deep passage into Grandy Sound, but, like the others between these islands, it is narrow, and has off its entrance some dangerous rocks.

Grandy Sound has good and sheltered anchorage in its northern part in 6 fathoms water, over mud, but the entrances are narrow and intricate, and, consequently, unfit for large vessels. A stream of moderate size runs into the NW. corner of the sound, and boats can ascend it for about $\frac{1}{2}$ mile to a stony bar. From the large valley above this the local fishermen procure timber and spars of considerable size.

The western portion of Grandy Sound is occupied by flats of sand and mud, which dry at low water, leaving only very shallow channels to the mouth of the river above noticed.

Anchorage.—There is anchorage inside Harbor Island in 5 or 6 fathoms water, but the holding ground is not good, and the space is confined.

The main shore forming the west and SW. sides of the sound is indented by several small bays, and continues, in a southwesterly direction, to Stickland Point, on which there is a considerable fishing village.

Caution.—The entrances to this harbor should not, under ordinary circumstances, be attempted without local knowledge.

Offlying Rocks.—Grandy Passage Sunkers lie off the SW. point of Harbor Island, and immediately outside Burnt Island Black Rock, a rocky islet, very similar in appearance to that off Grandy Passage. The Sunkers have over them depths of from 2 to 5 fathoms, the former depth being 600 yards S. 45° W. (S. 72° W. mag.) from the rocky islet. Westward of the islet there are numerous rocky ledges, shoals, and foul ground, extending to a dangerous patch named Bad Neighbor, which is just dry at low water. Its southern side is steep-to, but to the westward shoal water extends for 200 yards.

Southwest Rock, westward from the Bad Neighbor $1\frac{1}{2}$ miles, is another dangerous shoal, having but one fathom water over it, and lying nearly $\frac{1}{2}$ mile from the shore; it is of small extent, and only breaks in a heavy swell.

Black Rock, off Grandy Passage, open south of Burnt Island Black Rock, bearing N. 73° E. (S. 80° E. mag.), leads southward of the Southwest Rock and close southward of Bad Neighbor.

Coast.—From Stickland Point the coast bends sharply NE., forming God Bay, nearly 1½ miles in depth; at its head a small stream flows from a valley between the surrounding hills. Another stream, from which good water may be obtained, runs into the NW. corner, and beyond this there is a pond of considerable extent.

From here the shore trends SW. and forms a long rocky peninsula, divided near its middle by a narrow cut, and terminating in a white cliffy bluff known as Coney Head or Hiscock Point.

At 800 yards inside the point, in a small indentation of the coast, there is a village.

Eastward of Coney Head ¼ mile there is a small group of rocky islets named Hiscock Islets, and off the peninsula, inside, there are some rocky ledges, the highest of which, known as Twin Rocks, are 2 feet above high water.

Burnt Islands is the name given collectively to the numerous islands and rocks that front and partly fill God Bay. On the largest island, which is just within the entrance of the bay, there is a settlement, which, together with Stickland Village, has a population of about 300, all connected with the fishing industry. Two or three cargoes of dried codfish are annually sent from this place to Europe.

Of the smaller islands, the most conspicuous, as marking the entrance channels to the bay, are Colombier and Little Colombier, both rocky islets, 27 and 35 feet high, respectively; also East and West White Islands, by reason of the white rock on their summits. Between the islands there are several rocky patches, and in bad weather nearly the whole space between Colombier and the west end of Harbor Island is covered with breakers.

Coal and Supplies.—Ordinary supplies can be obtained, and occasionally a small quantity (15 to 20 tons) of coal.

Communication.—The coasting steamers do not call at Burnt Islands, but there is telegraphic communication with St. Johns and the Dominion of Canada.

Burnt Islands Harbor affords good and sheltered anchorage for vessels of moderate size, but even with a small vessel no stranger should attempt to enter without a pilot, for the channels are not easily distinguished from seaward, and the numerous rocks give but little room for maneuvering.

Buoy.—A small spar buoy is moored on the SW. edge of the shoal water extending from the largest island, to mark the channel between it and the Hat Rocks.

Directions.—There are three channels into this anchorage, one narrow and deep, but straight as regards its outer portion, close eastward of Colombier Islets and up to the deep water at the head of the bay.

A second, passing between Bad Neighbor and Twin Rocks, thence closing the western shore of the bay, and keeping it close aboard to avoid the patches north of Hat Rocks, on to the space north of the largest Burnt Island, where there is excellent anchorage in 10 fathoms water, over mud.

The third channel, and the one generally used by the small vessels frequenting the port, is closed to vessels drawing more than 12 feet water, by a bar extending NE. from Hat Rocks, and even vessels of this draft should not attempt to pass at low water.

Coney Bay extends $1\frac{1}{2}$ miles NE. from Coney Head. A third of a mile from the entrance to the head there are rocks lying off both sides of the bay.

Otter Bay, or Baie de la Loutre, is just west of Coney Bay. The west point is continued in sunken rocks for $\frac{1}{4}$ mile, and the entrance is encumbered by rocks.

Butter Pot, a remarkable hill, previously mentioned, lies east of the head of this bay.

Caution.—Neither Otter Bay nor Coney Bay should be entered without a pilot.

Dead Island Harbor (also known as Moat Harbor or Seal Cove), west of Otter Bay, is formed by Dead or Moat Islands, a group of islets and rocks with shoals extending more than $\frac{1}{4}$ mile southward.

There is anchorage for small vessels in a space $\frac{1}{4}$ mile long and 300 yards broad, approached by three passages, namely, Eastern and Middle Passages, too shoal and intricate to be taken without a pilot, and Western Passage, 100 yards wide at the narrowest parts, available for vessels drawing less than 20 feet water. To enter by Western Passage, keep Butter Pot in line with the north extreme of Dead Island, the largest and highest of the group, bearing about N. 65° E. (S. 88° E. mag.). This will lead between the shoals on either hand to the west extreme of Dead Island; pass, in mid-channel, between that and the island next north, and anchor in 4 or 5 fathoms water north of the NE. extreme of Dead Island.

A shoal, with 15 feet water over it, lies in the center of the harbor.

(H. O. Chart No. 661*.)

Coast.—The coast west of Dead Islands is low and foul for $\frac{1}{4}$ mile from the shore. Black Shoal, with 15 feet water over it, is 600 yards S. 45° W. (S. 72° W. mag.) from Black Rock.

Little Bay, a narrow creek with shelter for small craft, is one mile NE. of Channel Head, and may be entered by bringing the east shore to bear N. 51° E. (N. 78° E. mag.) and steering for it on that bearing. When the bay is entered, anchor as convenient.

Little Bay Shoal extends $\frac{1}{2}$ mile SW. from Little Bay Head, the east entrance point. Southeast Shoal, with 3 fathoms water over it, lies 1,200 yards S. 85° E. (S. 58° E. mag.) of Channel Head lighthouse. The triangular range lighthouses in line, bearing 59° W. (N. 32° W. mag.), leads between Southeast and Little Bay Shoals and SW. of Black Shoal.

Port Basque, $7\frac{1}{2}$ miles SE. of Cape Ray, may be readily distinguished by the large settlement of Channel and the white lighthouse on Channel Head. It is entered between Shoal Point on the east and Channel Head on the west side, and is barren and rocky in appearance, but contains good anchorage for moderate-sized vessels in a space nearly $\frac{1}{2}$ mile long and 300 yards broad, with from 8 to 11 fathoms water, over mud. Good fishing for salmon and sea trout may be obtained at Port Basque.

On the west shore of the entrance to Port Basque a small projection divides two coves, both of which are shallow. A government wharf is built on the NW. side of this promontory, alongside which there is a depth of 15 feet at low water. Vessels should be careful, when going alongside this wharf, not to enter the cove immediately to the westward of it, as the water shoals rapidly. At the head of this cove is a small islet, just above high water, on which is a ring-bolt to aid vessels when hauling into a narrow anchorage between the foul ground off this islet and Pancake Rock.

Lights.—Channel Head Light is a fixed red light, shown from a circular iron tower painted white. The light is 101 feet above mean high water, 29 feet above the ground, and in clear weather should be visible $15\frac{1}{2}$ miles from all points seaward.

Range lights mark the channel between Baldwin Rocks.

The front light is an intermittent white light every 3 seconds; duration of light, $1\frac{1}{2}$ seconds; eclipse, $1\frac{1}{2}$ seconds.

It is shown from a white, square pyramidal tower $22\frac{1}{2}$ feet high, surmounted by a square lantern with a single window, erected on the extreme SW. point of Road Island.

The rear light is an intermittent white light every 2 seconds; duration of light, 1 second; eclipse, 1 second.

It is shown from a lighthouse similar to that of the front light, but 15 feet high from base to window, erected on the mainland 490 yards N. 59° W. (N. 32° W. mag.) from the front light.

A fixed red light is shown from the northern and western sides of the lantern of the lighthouse on Road Island, to indicate the point of the island to vessels leaving the harbor. It is not visible from seaward.

Fog Signal.—A fog-signal building is erected 60 feet south of the lighthouse. During thick or foggy weather a 4-ounce cartridge is fired every 8 minutes.

The fog-signal building, lighthouse, and keeper's dwelling are connected by covered ways, the sides of which are painted white, roof black.

A red brick magazine stands 30 feet northeastward from the lighthouse.

Channel, a village, with a population of 723, situated on the mainland, just north of the island, forming Channel Head, contains three churches, and a windmill is also a conspicuous object on entering Port Basque.

Communication.—The mail steamer runs fortnightly from St. Johns during the winter months, but no farther westward. The railway from St. Johns is in course of completion to Port Basque.

Telegraph station.—There is a telegraph station here in connection with the Anglo-American lines.

Coal.—A supply of 1,500 to 2,500 tons of coal is usually kept, and can be shipped from a wharf alongside which is a depth of 22 feet at low water.

East Baldwin, a rock that dries 1½ feet at low water, lies nearly in the middle of the apparent channel to the harbor; shoal water extends 100 yards SW. from East Baldwin.

A small rock, with 10 feet water over it, lies 250 yards west (N. 63° W. mag.) from East Baldwin, and from the rock a shoal, with 3½ fathoms water, extends south 60 yards. A pinnacle rock, with a least depth of 14 feet on it, lies just NW. of this 10-foot rock.

West Baldwin, a rock 100 yards in diameter, the shoalest part of which has one foot on it at low water, lies 150 yards off the NE. side of Channel Island, and a little more than ¼ mile from Channel Head, leaving a passage only 80 yards wide between it and the shoal extending from the rock west of East Baldwin.

Buoys.—On West Baldwin a spar buoy is moored, in 3½ fathoms, painted black and white in horizontal bands; on East Baldwin is moored, in 3½ fathoms, a spar buoy, painted red; on a shoal lying between East Baldwin and Road Island is moored, in 3½ fathoms, a spar buoy, painted luminous white.

Road Island, 1,800 yards NW. of Channel Head, is 30 feet high and covered with turf over gray rock.

Gallyboy Island, low, flat, and covered with grass, and joined to the east shore at low water, lies NE. of Road Island, from which it is separated by a channel 200 yards wide, through which is a narrow passage with 3½ fathoms water, but local knowledge is required to make it available.

Pancake Rock, about 130 feet in diameter, is awash at low water, is the east extreme of foul ground extending from the west shore. The passage between the shoal off this rock and the foul ground off Road Island is only 90 yards wide, and care must be taken, therefore, to keep on the marks given.

Buoy.—A cask buoy, painted black, is moored on the eastern end of Pancake Shoal, in $3\frac{1}{2}$ fathoms water.

Flagstaff Hill, 222 feet high, and the greatest elevation near the coast, is surmounted by a large stone cairn, with a wooden triangle at the top.

Beacons.—Two beacons surmounted by diamonds stand on the shore westward of Pancake Rock; one, surmounted by a triangle, close to the shore under Flagstaff Hill; and two beacons surmounted by circular disks stand, one on the SW. extreme of Woody Island, and the other on the east shore of the Bottom of Port Basque, the narrow inlet NW. of the same island. The northern diamond beacon, open north of the southern beacon, bearing about N. 76° W. (N. 49° W. mag.), leads north of Pancake Rock.

Caution.—Too much dependence must not be placed on finding the beacons in position; H. M. S. *Buzzard*, 1894, reported the beacon at the base of Flagstaff Hill not to be in existence, and in 1890 the diamond beacons were reported as not existing.

Directions.—The range lighthouses by day and the lights by night should be brought in line, bearing N. 59° W. (N. 32° W. mag.), and this mark run on until the beacons surmounted by diamonds are in line, bearing N. 72° W. (N. 45° W. mag.). These should then be kept in line, to avoid the shoal off the south point of Road Island, until the circular beacons are in line, bearing N. 34° W. (N. 7° W. mag.). This last mark will lead in mid-channel between Pancake Rock and the shoals off Road Island, and when the north point of Gallyboy Island is seen open north of Road Island, N. 63° E. (East mag.), the anchorage may be steered for.

Caution.—The holding ground is bad until the channel is well open between Road and Gallyboy Islands.

Ice.—Port Basque is rarely frozen over, and navigation is, as a rule, open all the year; the harbor is sometimes blocked for a few days by drift ice which comes, with SW. winds, in February and March. The ice in the river is generally about 4 inches thick.

Tides.—It is high water, full and change, in Port Basque at 8h. 55m.; springs rise $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet.

(B. A. Chart No. 2143.)

Coast.—A group of islands and rocks connected by shoal water lies parallel to the shore for 3 miles westward of Channel Head.

Shoals stretch off the west side of these islands from Yankee Rock to Enragée Point, and this coast, and that from Enragée Point to Cape Ray, should not be approached by large vessels within the distance of one mile.

West Rock, with 4 fathoms water over it, lies $\frac{1}{2}$ mile S. 47° W. (S. 74° W. mag.) from Channel Head lighthouse.

Yankee Rock, the southern of the group, is low and lies $2\frac{1}{2}$ miles S. 79° W. (N. 74° W. mag.) from Channel Head lighthouse.

Yankee Shoal, with 4 fathoms water on it, lies 700 yards S. 36° E. (S. 9° E. mag.) from Yankee Rock, and Fail Rock, with 15 feet on it, 600 yards S. 48° W. (S. 75° W. mag.) from the same rock.

Duck Island, at the north of the group, is 40 feet high. Durant Island, 800 yards NNW. of Duck Island, consists of two mounds, the higher 25 feet, joined by a shingle beach.

Anchorage may be obtained in the northeastern part of the channel between Duck and Durant Islands in from 3 to 4 fathoms water, over sand, entered from the southwestward, by keeping mid-channel between these islands; or if from the eastward by keeping the NE. extremes of Durant Island and Yankee Rock in line, bearing N. 43° W. (N. 16° W. mag.), till that rock is neared, then mid-channel between it and Hobbs Rock, steering for Granby Point, the point of the mainland east of Durant Island, will lead to the anchorage.

Grand Bay, available for vessels drawing less than 9 feet water, affords perfectly sheltered anchorage in from 2 to 4 fathoms water; it is entered through a narrow channel north of the anchorage above mentioned, by keeping the east shore aboard.

Enragée Point is a low point surrounded by rocks, and the coast from it to Cape Ray is composed of low sand hills facing salt-water lagoons.

Halibut Rock, $1\frac{1}{2}$ miles N. 68° W. (N. 41° W. mag.) from Enragée Point, lies off the SW. extreme of Shag Island, a narrow rock nearly joining the mainland.

Barachois Rock, with 9 feet water over it, lies a little more than one mile N. 32° W. (N. 5° W. mag.) from Halibut Rock, and the same distance offshore.

Snook Bank, with 6 fathoms water over it, lies $\frac{1}{4}$ mile S. 32° W. (S. 59° W. mag.) from Cape Ray lighthouse.

Telegraph and Signal Station.—A telegraph and signal station is situated in a cove a little more than a mile east of Cape Ray, at the east end of the cable that crosses Cabot Strait to Aspee Bay in Cape Breton Island.

Cape Ray, the SW. extreme of Newfoundland, is very remarkable; the extreme is low, but at 3 miles inland is Table Mountain, 1,700 feet high, rising abruptly from the low land. Cook Stone,

1,570 feet high, is a small peak at the SW. extreme of the mountain, at the base of which is Sugarloaf, a conspicuous conical hill, 800 feet above high water. Two smaller conical hills lie between Sugarloaf Hill and the shore.

Light.—On the west side, and 217 yards from the extreme of Cape Ray, an octagonal-shaped wooden tower, 75 feet in height, and painted white, exhibits, at an elevation of 130 feet, a revolving white light every twenty seconds, which should be visible 17 miles.

Fog Signal.—The fog-signal house is situated on the beach; in thick weather, fogs, and snowstorms, a steam horn gives blasts of ten seconds in each minute, leaving an interval of fifty seconds between each blast.

Ice Report Station.—Information as to ice, wind, temperature, and weather indications may be obtained, during the months of April and May, by communicating with the signal station on Cape Ray.

Tides.—It is high water, full and change, at Cape Ray at 9h. 15m.; springs rise 6 feet, neaps rise 4 feet.

(H. O. Chart No. 611.)

St. Paul Island, lying in Cabot Strait, the main entrance to the Gulf of St. Lawrence, between the SW. extreme of Newfoundland and the north extreme of Cape Breton Island, is composed of primary rocks, principally mica slate, dipping at an angle of not less than 45 degrees to the southward. It is nearly 3 miles long, by one mile broad. Its NE. point is a small detached islet (although it does not appear as such from the sea), separated by a very narrow channel from a peninsula, between 300 and 400 feet high, which, together with the isthmus, is so precipitous as to be nearly inaccessible. The remaining greater part of the island, which is also steep and precipitous toward the sea, has two parallel ranges of hills, that on the eastern coast being the higher and attaining an elevation of 500 feet.

A valley runs through between these hills, having two small lakes or ponds 200 or 300 feet above the sea. These supply the principal stream on the island, which is about 2 yards wide, of yellowish brown water, well-tasted and wholesome, and descending into the sea in the southern part of Trinity Cove. There are several other, but much smaller, runs of water, one of which is into Atlantic Cove. These two coves are nearly one mile from the SW. extremity of the island, the first being on the gulf side and the other on that which is toward the Atlantic, as its name implies. They afford the only shelter for boats, and the only good landing on the island which is easier of ascent from them than at any other part.

The island is partially wooded with dwarf and scrubby spruce trees, useless, excepting for fuel.

Provision Depot.—The men in charge of a depot of provisions for the relief of shipwrecked persons, and furnished by the Government of the Dominion of Canada, reside on the north point of Trinity Cove, where there is a dwelling-house and store. Fish are plentiful around the island.

Anchorage.—Off Trinity and Atlantic Coves small fishing schooners anchor, with the wind offshore, in 10 or 12 fathoms, sand and gravel bottom, and at the distance of 400 yards from the rocks. In very fine weather large vessels might venture to ride in from 25 to 30 fathoms, about $\frac{1}{2}$ mile offshore, but should be in constant readiness to weigh at the first sign of a change in the wind or weather. There is little or no warning by the lead in approaching this island in foggy weather. On this account, although so bold and high, it is extremely dangerous, and many shipwrecks, attended with sacrifice of human life, have taken place upon its shores.

Lights.—Two lighthouses stand on St. Paul Island—one on the detached rock at the north point and the other on the extreme SW. point.

The northern lighthouse is 40 feet high, of an octagonal shape, and painted white. It exhibits a fixed white light, which can be seen from seaward on any bearing, excepting between N. 11° W. (N. 15° E. mag.) and N. 40° E. (N. 66° E. mag.), when it is hidden by the island.

The southern lighthouse is also an octagonal white building, 40 feet high, and exhibits a revolving white light every minute, which is visible from seaward on all bearings, except between S. 51° E. (S. 25° E. mag.) and S. 68° W. (N. 86° W. mag.), when it is obscured by the intervening land. Both lights are elevated 140 feet above the level of the sea, and when the weather is clear they may be seen 20 miles. These lights are exhibited whenever navigation is practicable.

Fog Signal.—During thick weather or in snowstorms a steam fog whistle, in Atlantic Cove, on the south side of the island, is sounded five seconds in every minute.

Submarine Cable.—The submarine cable is laid between the island and Meat Cove, at the north extreme of Cape Breton Island.

Lifeboats.—There are two surf boats on St. Paul Island to aid seamen in distress.

Ice Report.—There is a telegraph and signal station at the main establishment on St. Paul Island, from which information respecting ice, weather, and the state of navigation may be obtained.

The cable extends from the island to Meat Cove, at the north extreme of Cape Breton Island.

Beacons.—A tidal-gauge house, painted white, erected about 40 feet above high-water mark in the bight of Atlantic Cove, now forms a conspicuous landmark on the coast of the island.

A circular white beacon has been placed on the side of the hill, above the gauge. These two marks in line, bearing N. 70° W. (N. 44° W. mag.), lead clear to the southward of Big Dick, a dangerous detached rock, on which the sea breaks very heavily, off the NE. horn of the cove.

The above alignment affords a good guide to vessels anchoring off the cove in 15 fathoms.

Tides.—It is high water, full and change, at St. Paul Island at 8h.; springs rise 5 feet, neaps rise 3 feet.

Tidal Streams.—The irregularity of the tidal streams and currents add much to the danger arising from the fogs, which prevail in southerly, easterly, and often also with southwest winds. During the whole of a fine calm day at the end of June the current set to the SE. at the rate of one knot an hour past the north point of the island.

CHAPTER VI.

NEWFOUNDLAND WEST COAST.—CAPE RAY TO CAPE BAULD.

(H. O. Chart No. 1104, and B. A. Chart No. 2143.)

Cabot Strait.—This strait, which separates Newfoundland from Cape Breton Island, is named after the distinguished navigators John and Sebastian Cabot, from whom the first authentic account of the navigation of these waters was received in the year 1497.

Cape Ray.—See page 210.

The Tolt, 1,280 feet high, is a conical spur off the middle of the west face of the mountain. From Cape Ray to the northward the French have a right of fishing.

Brandies Rock, a dangerous breaker, lies one mile N. 85° W. (N. 58° mag.) from Cape Ray lighthouse, and $\frac{1}{2}$ mile from the nearest shore. It is about 50 yards in diameter and is nearly awash at low water.

Shag Ledge, a small rocky islet, lies close to the shore $\frac{1}{2}$ mile northward of Cape Ray.

The coast to the northward is nearly straight, faced by low cliffs, and bordered by a shingle beach that may be approached to the distance of 200 yards.

Little Codroy River is entered between Shoal Point to the southward, off which a reef extends $\frac{1}{2}$ mile, and Larkin Point, shoal for nearly the same distance. The entrance, nearly 9 miles from Cape Ray, can only be taken by boats, but anchorage for small vessels may be had off the mouth with shelter from offshore winds. A considerable settlement is being formed on the banks of this river.

The Coast north of Larkin Point becomes foul, and should not be approached nearer than $\frac{1}{2}$ mile.

(B. A. Chart No. 283.)

Great Codroy River, 12 $\frac{1}{2}$ miles from Cape Ray, can be entered at low water by schooners drawing 6 feet, but the tide is very strong; it can be ascended 3 $\frac{1}{2}$ miles from the entrance, but a pilot should be taken, as there is no natural leading mark. There is a large settlement in this neighborhood.

Stormy Point (Pointe Rosée), 2 miles west of Great Codroy River, is a reddish-colored, narrow, cliffy, projection, terminating in a ledge of low rocks, and should not be approached within $\frac{1}{2}$ mile.

Codroy Island, 36 feet above high water, and $\frac{1}{2}$ mile long, is 2 miles from Stormy Point and 180 yards from the mainland. From each extreme a shingle beach curves to the eastward, forming a harbor for boats and small schooners, but with no shelter from westerly sea.

Codroy Village is situated on a stony spit, and on the rising ground behind it, immediately opposite the center of the island; landing may generally be effected on the northern side of this spit sheltered by the island and the shallow bar extending between its northern end and the shore.

Communication.—The fortnightly steamer from Halifax and Sidney, C. B., calls here during the summer. Small supplies of fresh meat may occasionally be obtained, and there is communication with Great Codroy by road.

A little southward of the village is the church, a large white building, without either tower or spire, conspicuous from seaward. The population of this locality numbers about 500.

Codroy Road is formed by the island and curve in the coast opposite. Indifferent anchorage is afforded in from 5 to 9 fathoms water, over a stony bottom, but there is nearly always a swell rolling in from the westward. With strong winds from that direction there is no shelter, and the anchorage is then insecure. Numerous fishing nets are generally moored along the island shore, but the small buoys on them are easily seen and should be avoided.

Tides and Tidal Streams.—It is high water, full and change, at Codroy Road at 9h.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet. Along the coast the tidal streams run, generally, flood NE., ebb SW.; frequent heavy rips are seen between Codroy and Cape Anguille, and during bad weather there is nearly always a heavy confused sea in this locality.

Coast.—Between Codroy Island and Cape Anguille the land slopes steeply from the western termination of the Anguille Range. The higher portions of these slopes are covered with trees, but the lower portions show extensive clearings made by the settlers along the shore; the contrast between these clearings, with their large patches of dead timber, and the dark foliage of the trees above, and in some cases below, them affords a conspicuous mark from seaward for this part of the coast.

Between the foot of the slope and the low rocky shore is a narrow strip of flat land, dotted here and there with the cottages of the settlers, and immediately south of Cape Anguille is a small village known as Shoal Point.

Cape Anguille rises steeply from the sea to a sharp summit, then, forming a small hollow, it rises again to the range of high

TO CAPE BAULD.

(No. 2143.)

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hills behind. The faces of the slopes on its western and south sides have been cleared and are covered with grass and the dead stumps of trees; but the eastern side, as also the summit over the cape, are thickly wooded.

Tides.—It is high water, full and change, at Cape Anguille at 9h.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet, neaps range $1\frac{1}{2}$ feet.

St. George Bay.—From Cape Anguille the land trends away to the northeastward for a distance of about 50 miles, and then turning to the north and west, for about 30 miles more, forms an extensive bay, the entrance to which, between Capes Anguille and St. George, is $34\frac{1}{2}$ miles across. This bay is, with the exception of St. George Harbor, situated at its head, entirely without sheltered anchorage, and, as the prevailing winds are from the western quarter, there is generally more or less swell rolling in, which in bad weather is quickly increased to a very heavy sea.

Landing anywhere outside St. George Harbor, with the exception of two small rocky bights on the northern side, is during bad weather from the westward quite impracticable. This is especially the case on the southern shore, owing to the large number of ice-deposited stones and bowlders fronting the beaches. Numerous cottages and a few villages stand on the shores of the bay. The settlers are, with very few exceptions, fishermen, large quantities of cod, herring, and some salmon being annually caught, as are also lobsters in considerable numbers; farming, in a primitive fashion, is carried on by most of them, but their crops are for the greater part confined to hay and to the small quantity of oats and potatoes required for their own use and for the cattle, sheep, and horses they possess.

Ice.—St. George Bay fills with river ice, which is always in motion, being driven by northerly winds round Cape Anguille and by southwesterly winds round Cape St. George; the head of the bay occasionally freezes. According to the severity of the winter the ice may fill the bay early in January or not until February, and the clearance may be between 10th and 25th April; but it has been full in May, and in 1886, owing to the prevalence of south and SE. winds, it remained clear altogether. The upper part of the bay is generally frozen over between December and April; the mean of four years' observations gives the date of freezing as 15th January, and of clearance of ice 8th April; but sometimes the bay is clear of ice during a whole winter.

Fogs.—In the spring months, after the ice has disappeared, fogs are by no means uncommon, but they are neither so heavy nor so lasting as those experienced on the southern coast.

Tidal Stream.—During the prevalence of strong SE. winds the flood stream sets into the bay at the rate of about a knot an hour.

Coast.—From Cape Anguille to Lewis Point, a distance of about 16 miles, the coast is composed of cliffs, reaching in places an elevation of 270 feet, broken here and there by gullies extending from the Anguille Range of mountains immediately behind. It is steep-to and quite free from offlying dangers, the 10-fathom line, over the whole of this area, lying at an average distance of about 800 yards from the shore. The tops of the cliffs are densely wooded, as are also the slopes of the mountains behind, and, during the spring months especially, waterfalls mark the mouths of several streams.

At the entrance to some of the gullies there are small clusters of rude huts, which are used by the fishermen temporarily living there during the summer months. A narrow bush trail, originally cut for the benefit of persons shipwrecked on this inhospitable coast, runs parallel with the cliffs a short distance inland and connects Ship Cove with Cape Anguille.

Cape John.—Northeastward $4\frac{1}{2}$ miles of Cape Anguille is a rocky point known as Cape John, and immediately SW. of this is Snakes Bight, where anchorage may be obtained, in from 16 to 18 fathoms water, during southerly and easterly winds.

Great Friar Cove, 2 miles northeastward of Cape John, is a small semicircular indentation at the mouth of a deep gully, and $\frac{1}{2}$ mile northeastward of it there is a remarkable needle-pointed rock (locally known as Old Bone-em) detached from the cliff, but it is only distinctly seen when viewed from a direction nearly parallel with the shore.

Johnsons Cove lies nearly 6 miles northeastward of Old Bone-em, and between them are three other similar little bays, named respectively Mary Anns Cove, Hines Cove (situated at the mouth of a very deep gully), and Wreck Cove.

Johnsons Cove may usually be recognized by the fan-shaped waterfall just behind the beach, and also by the conspicuous bare cliffs, 1,260 feet high, forming the eastern side of the deep gully which here stretches back through the range.

Lewis Point is 8 miles northeastward of Johnsons Cove, and midway between them is Little Friar Cove. The point is plainly discernible, when coming from the westward round Cape Anguille, as being the apparent tangent of the cliffy coast. About 400 yards from the point and a little northeastward are two detached rocks, the easternmost being 20 feet high; they are quite steep-to.

From Lewis Point the cliffy coast continues $2\frac{1}{2}$ miles to a large detached rock, 53 feet high, known as the Gulls Nest. Immediately southwestward of this there is a cluster of low-water rocks which, with the Gulls Nest Rock, form, at the foot of the cliff, a place known as Seal Cove, where boats may easily land during the fresh

northeasterly breezes that occasionally blow obliquely across the bay. Half a mile southwestward of Seal Cove a small patch of rocks, with less than 6 feet of water over them, lies 200 yards from the shore.

From Seal Cove the cliffy coast continues for $2\frac{1}{2}$ miles to the mouth of a gully, off which, at a distance of 200 yards, lies Ship Rock, 58 feet high.

Ship Cove, formed by a slight curve in the coast, $\frac{1}{4}$ mile southward of Ship Rock, may be said to extend from The Spout (a conspicuous waterfall $\frac{1}{4}$ mile eastward of Gulls Nest Rock) to Shoal Point.

Shoal Point is the termination of the cliffy coast line extending from Cape Anguille, though from Ship Cove to this point the cliffs are composed almost entirely of clay and sand, while to the westward they are more generally of a rocky nature. A stony ridge, with one to 3 fathoms water over it, extends $\frac{1}{4}$ mile from the point, in a southerly direction, terminating 600 yards outside Ship Rock. Directly off the point, but close to the shore, there is an extensive patch of low-water rocks and boulders.

Anguille Range comprises the hill country extending from Cape Anguille to the northeastward and terminating 5 or 6 miles to the southward of Shoal Point. The highest point of the range rises to 1,862 feet, but it is generally flat-topped and much cut up by large deep gullies. The slopes are densely wooded, but the summits are bare of large trees, being generally covered with dwarf spruce which grows so thickly as to be almost impassable.

A noticeable feature on the side of the hill at the back of Ship Cove is the telegraph road leading to Great Codroy, which has been cut through the woods, and passes over the top of the range.

The locality under the eastern termination of the Anguille Range and extending from Shoal Point to Harbor Head is generally known as the Highlands.

Plaster Cove is a bay lying northeastward of Shoal Point. Its shores are dotted with several cottages, occupied by settlers, who find employment in fishing, farming, and lobster packing in this neighborhood; $\frac{1}{4}$ mile from the point there is a striking outcrop of gypsum in the cliff, which gives rise to the local name.

The northern part of the bay is shallow, there being only $3\frac{1}{2}$ to 4 fathoms water 600 yards from the shore, but southwestward of this good anchorage may be found during offshore winds in from 6 to 10 fathoms water, over, in places, a soft bottom.

Immediately inside the northern point of Plaster Cove is Highlands church, a conspicuous white building with a small square tower, and NW. by N. from it, $\frac{1}{4}$ mile from the shore, there is a small stony patch of $3\frac{1}{2}$ fathoms, with 6 and 7 fathoms water around it.

Coast.—Northeastward from Highlands church the coast is formed of clay cliffs, 65 to 100 feet high, and fronted by a stony beach. This continues for a little over a mile to Harbor Head, behind which there is a low wooded rise, the summit being 200 feet above high water. Back of this, and extending to the SE. and east, the country is composed of low wooded ridges, alternating with extensive and generally swampy flats, through which flow several streams or brooks that rise in the mountain ranges 12 to 14 miles inland. Good salmon pools are stated to exist in all these streams, but the number of fish ascending is reported to be decreasing.

Northeastward of Harbor Head the coast falls a little, the cliffs giving place to low slopes, again succeeded by a short stretch of cliff 80 to 90 feet high, fronting which, at 200 yards from the shore, are some detached boulders and patches of rocks.

River Brook, at the eastern termination of these cliffs, and the westernmost of the streams referred to above, is rather more than 200 yards in width at its entrance, but not deep enough to admit boats except at the top of high water.

Coast.—From River Brook to Crabb Brook, a distance of 2 miles, the coast is composed of low cliffs and steep slopes of sand and clay, fronted by a stony beach. Off this are numerous boulders, probably deposited by ice, and $\frac{1}{2}$ mile from River Brook a prong of shoal water, formed by some of these boulders and detached rocky patches, extends 600 yards from the shore, which should here be given a berth of $\frac{1}{2}$ mile.

Crab Brook, the position of which may easily be recognized by the church, with its square tower, standing on the summit of the western side of the entrance, is between the heads forming its mouth, nearly 400 yards wide, but this space is reduced a half by a stony spit projecting from the foot of the hill on the western side. Banks of stones, that dry at low water, extend nearly across the entrance, leaving a narrow, crooked channel, in which there is only one foot at low water.

Small vessels pass in here when the tide is up and discharge at a rough wharf on the eastern side. Abreast this the water quickly shoals, and the space, which at high water appears extensive, is at low water largely filled by dry banks of sand and stones. At $\frac{1}{2}$ mile within the entrance the bed of the stream is filled by marshy flats, which become islands as the tide flows in little channels through them. These channels unite about $\frac{1}{2}$ mile farther up, when the stream turns abruptly to the eastward, under a high, wooded cliff.

The village is situated on either side of the stream, just inside the entrance, but the larger number of houses are on the western

side. The population numbers about 200, all of whom are engaged in fishing and farming.

There is a church, school, and post-office, but no telegraphic communication, though the line from Sandy Point to Great Codroy passes close to the village. There is a rough road from this place to the south side of St. George Harbor.

Barachois Brook, very shallow, and having a stony bar that is nearly dry at low water, is 2 miles northward of Crabb Brook, the coast between being composed of sand cliffs, rising at one point to a height of 190 feet; some fishermen live round its shores.

Robinson Brook, the entrance to which lies $\frac{1}{4}$ mile northward of Barachois Brook, has also a stony bar, which is nearly dry at low water. Inside, the space between the sloping sides of the river valley is partially filled by numerous flat, marshy islets, between which the stream runs in narrow channels. The village, with a population of about 200, stands on the northern side of the brook. There is a church and school, and the inhabitants are chiefly engaged in fishing and farming.

About 9 miles back from the village good coal is reported to have been discovered. At $\frac{1}{4}$ mile offshore, between Robinson and Barachois Brooks, there is a small patch of 5 fathoms, with 6 and 7 fathoms water around it. The bottom is generally stony off the whole of this part of the coast and affords only temporary anchorage.

Communication.—There is a post-office and fortnightly communication by road with the settlement at Sandy Point, which is 26 miles distant.

Robinson Head.—From the northern side of Robinson Brook the cliffs, of clay and sand, rise gradually toward Robinson Head, $\frac{1}{4}$ mile to the northward. The western summit of the head is composed of a little peak of sand with some grass and a few stunted trees on its landward side, where it falls steeply to a hollow in which there are two small ponds. Coming from the westward, this peak, with its seaward face of white sand, is very conspicuous. The seaward face of the slope is composed of alternating patches or strips of white sand and dark brushwood, which make this part of the coast very conspicuous from any direction.

Eastward of the above summit the land falls again to an angle in the shore, locally known as Stinking Cove, in which there is a small lobster factory. From this point to Fishels Brook, a distance of 5 miles, the coast is composed of sand and clay cliffs, 80 to 113 feet high, the land behind being of slight elevation, with marshy flats or "barrens" separating low, densely-wooded ridges.

Three small streams, known respectively as Red Brook, Seal Brook, and Rattling Brook, cause breaks in the cliffy shore line,

which is fronted by a stony beach having off it numerous ice-deposited stones and boulders that make landing at low water, even in fine weather, a difficult operation for ordinary boats.

There are here and there, behind the cliffs, cottages and strips of cultivated land.

Fishels Brook rises in the mountain range, some 12 miles back from the coast, and flows into the sea between a high steep bank on its eastern side and a long stony spit, on which are some houses, projecting from the elevated land to the westward; the entrance is very narrow and, at low water, nearly dry; inside, there is a small deep pool above which numerous banks of stones and shingle occupy the bed of the stream.

Off this brook, at a distance of little over a mile, there begins a ridge of rocky uneven ground extending toward Bank Head; its southwestern portion is outside the 10-fathom line, but, though closely examined, nothing less than 7 fathoms water could be found. Round this spot there are depths of 10 and 12 fathoms. Northeastward the bank inclines a little toward the shore, the depth over it varying from 6 to 9 fathoms.

Bank Head lies $2\frac{1}{2}$ miles northward of Fishels Brook, the coast between being a continuation of the sandy cliffs to the southwestward, which, however, are in this locality somewhat higher and fronted by a wider beach of stones. Three brooks, flowing through deep valleys, reach the sea here—Barry Brook, Middle Brook, and Journois Brook, the last named being one mile from Bank Head. At $\frac{1}{4}$ mile north of Journois Brook the cliff rises a little and continues to its summit, 160 feet above the sea. This cliff, which is conspicuous, is, strictly speaking, Bank Head, but the whole of the neighboring locality is generally so named.

Behind the head there are some small ponds and several detached ridges, of moderate elevation, separated by the "barrens" so frequently occurring in this country, and reaching to the foot of the range which at a distance of about 12 miles inland extends in a southwesterly direction. Several of the summits of this range are very conspicuous.

Coast.—At $\frac{1}{4}$ mile northeastward of the summit of Bank Head the sandy cliff ceases abruptly, and then rises again to a low conical sandhill, eastward of which is a small bight known as Bank Head Cove. Here there are a few cottages and fish stores, and landing may be effected, when it is quite impracticable on any other part of the coast, between Sandy Point and Robinson Head.

Northeastward of this cove the coast is lower than that to the southwestward. It continues, in cliffs about 75 feet high, here and there covered with bushes, for $2\frac{1}{2}$ miles to Youngs Cove, which is a slight curve, formed by the projection of the low stony peninsula

named Flat Island, and contains a few cottages occupied by fishermen.

Flat Bay Brook, a stream flowing into the shallow bay between Flat Island and the shore, $1\frac{1}{2}$ miles eastward of Youngs Cove, is nearly $\frac{1}{2}$ mile wide at its entrance, immediately inside which it is divided by a low point having on it some houses. The westernmost portion is merely a shallow bay known as Muddy Hole. The eastern portion is the stream, flowing from the mountain range about 7 miles inland, but it is much obstructed by banks and islets.

South Side is the name given to the district extending from Flat Bay Brook to the northeastward for about 5 miles. The coast is formed of low banks terminating the long slope from a ridge, about 300 feet high, the summit of which is about one mile back. Numerous houses and fish stores line the shore, and the surrounding land is more or less in cultivation. A fairly good road runs southwestward to Robinson Head and eastward to the head of St. George Harbor.

Steel or Cairn Mountain, a remarkable mass of ironstone, rising to a height of 952 feet from the low country behind the coast ridge mentioned above, and in front of the mountain range extending from the southwestward, has on it two stone cairns said to have been erected by Captain Cook. Flat Bay Brook runs under the foot of this mountain, and in the locality deposits of iron and gypsum have been found.

Northeastward the rugged broken ranges continue in a northeasterly direction, and 3 miles from Steel Mountain there is, on the western face of the coast range, a remarkable white patch, formed by a landslide, which is very conspicuous from far down the bay.

(H. O. Chart No. 594.)

Flat Bay, between Flat Island and the mainland, is very shallow and obstructed by banks which dry at low water. On the southern side there is sufficient depth for a boat, at low water, to go about 3 miles up; but the thick weeds, with which the bottom is covered, would prove very troublesome to one propelled by steam.

Toward the northern part of the bay, situated on a large bank of sand and shingle, is Moyac or Woody Island, now a mere bank of sand, covered with coarse grass, but which at one time had on it several trees.

Flat Island is a long, low projection of stones and shingle, extending from Youngs Cove to Harbor Point, a distance of $6\frac{1}{2}$ miles, and forming, with the main shore, the shallow area described above as Flat Bay. In some parts this bank of stones is only about 50 yards across, while toward the eastern end it is, at one spot, rather more than $\frac{1}{2}$ mile. Long stretches of it are quite bare, but

there are two extensive clumps of spruce trees, as well as some small patches of scrub.

At $\frac{1}{4}$ mile from the junction of this peninsula with the main shore, and 200 yards from the beach, there is, off its seaward side, a patch of stones which dry at low water, and in this locality, as also for some 3 miles to the northeastward, the shoal ground extends for nearly $\frac{1}{4}$ mile from the beach. Outside the 5-fathom line, however, the water deepens very quickly to upward of 20 fathoms. Those feeling their way along this shore during a fog should bear this fact in mind, and not approach to a less depth than 10 or 12 fathoms. Toward the eastern extreme of Flat Island the deep water approaches the shore, and eastward of Harbor Point the 5-fathom line is only 60 yards from the beach.

Light.—A cylindrical iron lighthouse, 35 feet in height, stands on a concrete base, 100 yards within the extreme of Harbor Point. It is painted white, and exhibits, at an elevation of 35 feet, a fixed white light, which should be visible 7 miles.

Sandy Point is the name given to the settlement that stands on the wider portion of Flat Island, near its eastern end. The population numbers about 400, principally connected with the fishing industry. There are some stores in which ordinary articles may be purchased, and supplies of fresh meat and vegetables may generally be obtained, either here or on the opposite shore.

Communication.—There is postal communication weekly during the summer, by means of the steamers of the Newfoundland Coastal Steamship Co. from St. Johns, and by a steamer from Halifax and Sydney, C. B., both of which call here on their trips to and from the more northern ports on this coast. There is also telegraphic communication with St. Johns and the Dominion. A branch of the railway, joining St. Johns with the western coast, crosses the mouth of St. George River and skirts the mainland opposite. A pier for landing material for the railway has been constructed at Turf Point; it is 1,000 feet in length, and has a depth of 30 feet at its extremity.

Supplies.—Fresh provisions can be obtained.

Bank.—Inside Harbor Point the flat sandy shore forms a slight curve, in which there are numerous fishing stores and landing stages. A bank of sand and mud, dry at low water, extends from this shore for nearly 200 yards and off Messervy Point to 250 yards; it is very steep-to, there being 5 fathoms water within 75 yards of the edge.

Wharf.—The government wharf at Messervy Point has a depth of 2 fathoms alongside it at its western corner, and 3 fathoms at its eastern corner, but, as there is a good deal of wreckage about this part of the anchorage, care should be taken, when going

alongside, to keep the vessel to the eastward of the westernmost corner.

Westward of the wharf the dry bank extends farther from the shore, and the line of 3 fathoms reaches across the entrance of Flat Bay.

The Episcopal church, with a low spire, is situated in a clump of trees $\frac{1}{2}$ mile southwestward of the lighthouse, and the Roman Catholic church in the same direction and about the same distance from Messervy Point. Both are conspicuous when approaching from the westward.

Tides.—It is high water, full and change, at Sandy Point at 9h. 45m.; springs rise $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet; neaps range $1\frac{1}{2}$ feet. During springs the stream runs with some strength at the anchorage.

St. George Harbor is situated at the head of St. George Bay. Its entrance, between Indian Head on the north side and Harbor Point on the south, is 3 miles across, and its depth to the entrance of St. George River is also about 3 miles.

Anchorage.—The soundings vary from 12 to 18 fathoms in the center of this space, and vessels may anchor anywhere within a reasonable distance of the shore, but during strong westerly winds a heavy sea sets in, and with bad weather from the eastward the place is subject to violent squalls off the high land. The shelter of Flat Island should therefore be obtained if possible. That anchorage is easily accessible, and affords excellent holding ground, with smooth water, in from 6 to 10 fathoms water, over a bottom of stiff mud.

When approaching, the beach at the extremity of Harbor Point may be rounded at any convenient distance, and giving its inner angle a berth of at least 300 yards, anchorage may be taken up where convenient; but a good berth is in 6 or 7 fathoms water, with the Roman Catholic church bearing West (N. 62° W. mag.) and the lighthouse North (N. 28° E. mag.). Strong NE. to SE. winds are frequently experienced here, but though the squalls are furious the water is smooth, and the holding ground so good that, with good ground tackle, a vessel may lie in safety.

Turf Point, on the southern shore opposite Sandy Point, is a low flat projection composed of peat. Off it are some detached boulders locally known as Seal Rocks, and which give the name to the adjoining cove and settlement.

Indian River, known also as the Barachois, lies $1\frac{1}{2}$ miles from Turf Point. The space within the entrance is considerable, but it quickly narrows between high wooded banks.

From here low sand cliffs extend to St. George River, the entrance to which is known as the Gut. During fine weather

boats can enter this channel at low water, but the tide runs strongly through, and there is generally more or less swell setting on the shore; during strong westerly winds it should not be attempted. There is a large lumber mill on the southern side of the entrance, and some houses. The road to Stephenville is here continued by means of a ferry across the river.

Sea Wolf Lagoon, on the northern side of St. George Harbor, is formed by an indentation in the coast fronted by a long narrow strip of stony beach, and has an entrance which is all but dry at low water. Inside the spit there is a depth of $3\frac{1}{2}$ fathoms.

Indian Head is a remarkable cliffy headland on the north side of St. George Harbor. The summit of the cliff is 180 feet above the sea, but it gradually rises to a conspicuous conical wooded peak 631 feet high, from which the wooded hills extend in a north-easterly direction to a deep valley, which separates them from the higher ranges extending inland. On these latter are some conical summits which are conspicuous from seaward. Mount Hubert, distinguishable by some remarkable bare patches near its summit, is 1,472 feet high, and another peak, farther to the northeast, is 2,290 feet.

The northern sides of the Indian Head Hills fall steeply to a large shallow lagoon, separated from the sea by a narrow strip of stony beach 300 yards across. Off this beach, as also off Indian Head, the 10-fathom line is less than $\frac{1}{2}$ mile from shore.

(B. A. Chart No. 2876.)

Stephenville comprises the district extending northwestward from Indian Head for about 5 miles; numerous houses are dotted about the shores of the lagoon noticed above, and on the low slopes northward of it, as well as on the beach, and the Roman Catholic church, with its long white spire, is conspicuous. From here there is a road passing round the lagoon to the ferry at St. George River, and also in the other direction to Isthmus Bay. A short distance east of the church, Blanche River, a small stream, flows into the sea through the stony beach; behind, the country is of moderate elevation, thickly wooded where not cultivated, and has several ponds.

Romaines Brook flows into the sea $3\frac{1}{2}$ miles westward of Stephenville church, the coast between being composed of high banks of sand, broken in places by small streams issuing from the country behind; the entrance to the brook is dry at low water and very narrow; the pools inside it are frequented by large quantities of sea trout. About 200 yards from its mouth the brook is crossed by a bridge carrying the road to Isthmus Bay; above it the stream is obstructed by banks of stone and shingle, and on the eastern

side there is a remarkable outcrop of gypsum, small quantities of which are occasionally exported; this outcrop is very conspicuous from the SW. when the sun is shining on it.

Supplies.—On the western bank of the stream there is situated one of the best farms in this locality, and here fresh meat, butter, etc., can generally be obtained.

Table Mountain, lying directly behind the entrance to Romaines Brook, is a thickly-wooded hill rising to a height of 980 feet above the sea; NE. of the western summit it rises a little, forming the southwestern termination of the range of high hills extending along the eastern shore of Port au Port. Some deposits of asbestos have recently been found in the neighborhood of these hills, and the mines are now being worked during summer.

Eastward of Table Mountain the country is broken, but rises gradually from the coast to the higher land, two detached whale-backed hills, about 4 miles from the shore, being conspicuous. The highest of these reaches an elevation of 1,090 feet.

The western slope of Table Mountain is gradual, falling toward Isthmus Bay, and terminating in a steep sand cliff 94 feet high, on the SW. end of which is a Roman Catholic church.

Isthmus Bay, formed by a sharp curve in the coast, lies just to the westward of Table Mountain, and is about $1\frac{1}{4}$ miles across by $\frac{1}{4}$ mile deep. The soundings within this space increase gradually from the shore to 5 and 6 fathoms, over stones and gravel, and though frequently resorted to as an anchorage, it is by no means a good one, as the holding ground is uncertain, and during west or SW. winds there is a heavy swell. The stony beach at the head of the bay is only 40 or 50 yards across, and behind it is a shallow lagoon separated from East Bay (Port au Port) by another narrow beach of stones. On both these beaches, as well as on the sloping ground over the western side of the bay, there are numerous cottages. The Episcopal church and the post-office are on the eastern side, approached from the shore by a road up the steep side of the sand cliff, mentioned above as being the termination of the slope of Table Mountain.

This district is locally known as the Gravels; the population numbers about 100.

Communication.—Coasting steamers call here occasionally during the summer months, and a short pier is being constructed on the western shore for their convenience, but the postal communication is generally by road to the settlement opposite Sandy Point. There is no telegraphic communication.

Shoals.—About one mile southward of the western point of Isthmus Bay there are some patches with $6\frac{1}{2}$ and 7 fathoms water over them, and $1\frac{1}{4}$ miles S. 3° E. (S. 25° W. mag.) from the same

point there is a stony patch of 5 fathoms; light tide rips may be observed over these patches during spring tides.

Tides.—It is high water, full and change, at Isthmus Bay at 9h. 40m.; springs rise $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet.

Coast.—Westward of Isthmus Bay the coast, composed of low cliffs backed by thickly-wooded ridges of moderate elevation, continues to a slight bend, where there are a few houses, and known as Felix Cove. Here a small stream runs over the beach, and $\frac{1}{2}$ mile southward there is a rocky patch on which the depth is $4\frac{1}{2}$ fathoms.

Westward of Felix Cove the coast, of similar formation, continues, but behind the land rises considerably, the ridges being here 400 to 500 feet in height and densely wooded.

At $1\frac{1}{2}$ miles from Felix Cove, and below two rather conspicuous houses on a green slope, is one of the rocky coves referred to as affording a partially sheltered landing place for boats in anything but very bad weather. The rocks forming this cove make a small angle with the shore for about 70 yards, the entrance facing to the eastward.

The coast in this locality is everywhere steep-to.

Campbells Cove is formed by a short bend in the coast $2\frac{1}{2}$ miles westward of Felix Cove. In the middle of this bight is another rocky projection, somewhat similar to that just described as being a good landing place; but the one in this cove, being more sheltered, is the better. At low water, however, there is hardly depth enough for an ordinary ship's boat, and if there is any swell running, landing can not safely be effected until the tide flows.

Around the shores of the bay are several cottages and a good deal of cultivated land. A fairly good road runs from Isthmus Bay, passing a short distance back from the shore. Behind rises Pierways Hill, a remarkable stony and comparatively bare hill, with two similar summits, the westernmost of which is 779 feet high. To the westward this hill falls in a gradual slope to Abrahams Cove.

Coast.—The point forming the western side of Campbells Cove is a perpendicular cliff, 99 feet high, having at its foot a mass of rocks and boulders. Westward from this there is another bend in the coast, sometimes called Messervy Cove, where there are also some houses and cultivated lands. The cliffy coast continues to Abrahams Cove, another indentation, with a ravine at its head, and a very conspicuous cliff, 145 feet high, on its western side. Here the 20-fathom line coming from the southern side of St. George Bay closes in with the coast and continues to the westward at a distance of about $\frac{1}{2}$ mile.

The land behind is composed of flat-topped heavily-wooded ridges.

Westward of Abrahams Cove a low rocky point, named Jerry's Nose, forms the eastern side of another indentation, known as Fiods Cove; here there are also some cottages. Numbers of dorys may be seen about all these coves, but, except at the places named, there is no landing in bad weather.

Ship Island and Cove.—Ship Island, small, rocky, and 36 feet high, lies off the end of the projection of the coast forming the western side of Fiods Cove, with which it is connected at low water. A rocky patch, with $3\frac{1}{2}$ fathoms water over it, lies from 350 to 500 yards from the islet in a southwesterly direction. Between the two there is a depth of $6\frac{1}{2}$ fathoms, but the passage is narrow and had better be avoided.

Ship Cove lies on the western side of the islet and of the point referred to above, and though a deeper bight than any of those to the eastward, it does not afford good anchorage, except during continued periods of offshore winds. At the head of the cove is a shingly beach, on which are some cottages, and from here there is a path through a valley between the ridges, leading to Pic à Denis (locally Picadilly) in Port au Port.

Coast.—The coast, formed of rugged irregular cliffs, 80 to 90 feet high, continues from Ship Cove westward for $1\frac{1}{2}$ miles to Pigeon Head, a remarkable perpendicular bluff rising to a height of 110 feet. At its foot are some boulders and ledges of rock, but they are quite steep-to. Behind this part of the coast the land rises to heavily-wooded ridges, 700 to 800 feet in height, intersected here and there by deep ravines, from which streams flow into the sea.

Lower Cove is situated directly inside Pigeon Head, from which the cliff falls gradually toward the beach at the head of the cove. Here there is a small settlement.

In the center of the cove, 1,200 yards West (N. 62° W. mag.) from Pigeon Head, there is a rocky shoal of 4 fathoms, with from 7 to 11 fathoms water around it. Inside the shoal temporary anchorage may be found in from 7 to 10 fathoms water, but the ground is rough, and with any winds westward of N.W. there is a heavy swell.

Coast.—From Lower Cove the coast, formed of moderately high cliffs, continues westward to a small gravelly beach, with sloping ground behind it and a large waterfall near, locally known as Charlie Sheaves Cove, and where there are two or three houses. Westward the cliffs again become higher for a short distance, falling gradually toward March Point, $4\frac{1}{2}$ miles from Lower Cove. At $1\frac{1}{2}$ miles eastward of the point the land rises very steeply from the cliffs. The eastern part of this hill is bare and stony, and therefore conspicuous for some distance to the southward and westward. The western part, separated from the eastern by a deep gully, is thickly wooded and culminates in a summit 765 feet high, though farther back the hills again rise to a height of 1,120 feet.

Sea Mouse Rocks comprise three rocky patches lying off the coast between Charlie Sheaves Cove and March Point. The easternmost patch, lying $2\frac{1}{2}$ miles S. 82° W. (N. 70° W. mag.) from Pigeon Head and 750 yards offshore, has over it a depth of 15 feet at low water. Within the 3-fathom line it is about 150 by 250 yards in extent, its longest diameter being in a general ENE. and WSW. direction.

From this another patch, over which the least water is $5\frac{1}{2}$ fathoms, lies 750 yards S. 34° W. (S. 62° W. mag.), and between the two there is a narrow channel, with 12 and 13 fathoms water.

The westernmost shoal lies $1\frac{1}{2}$ miles westward of that first described and 750 yards offshore. Its extent within the 3-fathom line is about 200 by 300 yards, with a least depth of 6 feet at low water. Between these shoals and the shore the soundings vary from 6 to 10 fathoms.

The whole of the shingle beach at the head of Ship Cove, seen clear of the cliffy bluff half way between it and Pigeon Head, bearing N. 79° E. (S. 73° E. mag.), clears the two shoaler patches, but leads over or close to the $5\frac{1}{2}$ -fathom patch.

March Point is low and flat for some little distance back from the shore. The generally green appearance of this flat, projecting beneath the dark wooded hills behind, makes the point easily distinguishable. Eastward of it there are some houses, both on the shore and on the flat; in the neighborhood of these the ground is more or less cultivated. The point is fronted by a stony beach and some ledges of rock, off which the 5-fathom line extends $\frac{1}{2}$ mile. March Point Bank, $1\frac{1}{2}$ miles southward of March Point, is a ridge about $1\frac{1}{2}$ miles in length, having over it 23 to 25 fathoms water.

Coast.—The coast westward of March Point is composed of low cliffs, with a narrow strip of level land behind them, thickly wooded except where cleared by settlers, and extending to the foot of the hills, which here approach the shore. The stony beach, having off it some flat ledges of rock, is fairly steep-to, but the bottom is rough, and only fit for temporary anchorage in fine weather.

Nearly 3 miles from March Point there is a small settlement known as Degras, and $1\frac{1}{2}$ miles farther SW. is another named Grand Jardin. The inhabitants of these two places, as also those at Petit Jardin, a few huts $\frac{1}{2}$ mile farther west, are principally French, and engaged almost entirely in fishing.

Cape St. George.—From the high land behind the village of Degras the dark wooded ridges, with occasional bare stony summits, fall toward Cape St. George, a short distance from the extreme of which the wood ceases, and bare grassy slopes extend to the edge of the cliffs, which, on the south side of the cape, are 40 to 50 feet

high. Off the western extreme of these cliffs, but connected with them by a low shelf, is a pyramidal rock which shows plainly from the southward; close to it is a low detached rock, and here the coast turns abruptly to the northward, rising in high perpendicular cliffs, which at $\frac{1}{4}$ mile from the cape are 225 feet high. Beyond this they rise still higher toward Cape Cormorant. Cape St. George is quite steep-to, and may be rounded closely, but there is nearly always a swell setting on to the shore, and the tidal streams run strongly round the point.

Cape Cormorant, $5\frac{1}{2}$ miles NNE. of Cape St. George, rises, in a perpendicular limestone cliff, to a height of about 700 feet, and then in a steep slope, to a somewhat conical summit 968 feet above the sea. Between this cape and Cape St. George the coast is formed of high cliffs, and nearly midway there is an indentation, named Big Cove, in which a few fishermen occasionally live during the summer months. Eastward of this cove the cliffs are fronted by some low rocky islets and low-water features, but they are generally steep-to and free from offlying dangers. Behind, the land rises in bare stony hills and wooded gullies to the summit of a long rocky ridge, known as White Hills, which extends in an easterly direction toward the head of Port au Port.

Red Island, lying 6 miles from Cape St. George and one mile from Cape Cormorant, is about 1,400 yards long by 700 wide, its coast line being composed of red clay cliffs, rising on the northern side to the height of 292 feet above the sea. The top of the island is covered with coarse grass and dead stumps of trees, and at the eastern end, where there is a stony beach and spit at the foot of the cliffs, are some storehouses and dwellings, occupied during the summer by a party of French fishermen from the island of St. Pierre. A wooden tramway, for facilitating the carriage of stores from the beach to the top, is a conspicuous feature when approaching from the southward.

The northwestern side of the island is fairly steep-to, the 3-fathom line being about 200 yards from the shore, but off its NE. and SW. ends foul ground extends for about $\frac{1}{4}$ mile; this is continued off the southern and eastern sides of the island, and thence, in a narrow rocky ridge, across to the mainland under a steep gully, situated 1,400 yards northeastward of Cape Cormorant.

The Ridge, above mentioned, is midway between the island and the mainland, only about 100 feet across, and here the depth varies from 15 to 18 feet; nearer the island and about 400 yards from the end of the Stony Spit, there is a spot with only 7 feet water over it, but between this and the shore there are depths of 12 and 13 feet.

Vessels of moderate draft may safely cross it in fine weather by keeping Crow Head in line with Low Point, bearing about N. 46° E. (N. 74° E. mag.).

Tidal Streams.—During spring tides the streams run strongly over The Ridge; flood to the northeastward and ebb to the southwestward, and there are considerable overfalls, especially with strong westerly winds, while in bad weather breakers extend nearly the whole way across.

Red Island Road.—On the western side of The Ridge fairly good anchorage may be obtained, with winds to the southward of WSW., in from 11 to 14 fathoms water, over sand and, in places, muddy bottom; but when the wind draws to the west or NW. a heavy sea sets in at this anchorage, and although a vessel with good ground tackle might hold on, it would be imprudent to remain. A good berth for a large vessel is in 14 fathoms water with the northern extreme of the island bearing N. 81° W. (N. 53° W. mag.) and the first cliff north of Cape St. George just shut in, S. 31° W. (S. 49° W. mag.).

It may here be remarked that a heavy ground swell is usually the forerunner of strong westerly winds in this locality.

Coast.—About one mile northeastward of Cape Cormorant the cliffy coast line terminates, being succeeded by a low shore, fronted by a stony beach for a distance of about 2½ miles, where it again rises into cliffs of moderate height, culminating in Crow Head, a bluff 112 feet above the sea. At 1½ miles southward of Crow Head is Low Point, a slightly-rounded projection of the shore; southward of this is Les Vaches, a small settlement where there is a lobster factory and some cottages. Behind the fore shore the land rises gradually to thickly wooded ridges of moderate elevation.

White Rock, lying ¼ mile offshore, nearly midway between Low Point and the Ridge, is a small patch of rock having over it a depth of 18 feet; it may be avoided by keeping the land, about Cape St. George, open of the cliffs southward of Cape Cormorant, bearing about S. 21° W. (S. 49° W. mag.).

Cow Rocks, comprise a cluster of rocks and shoals, about 1,600 yards in extent, fronting the shore off Low Point at a distance of about 600 yards. The northernmost rocks are 9 feet above high water; 700 yards SW. of them is another small cluster which dry 2 feet, and between are several shoal patches, while 700 yards southwestward of the last-mentioned dry rocks, and directly off the houses at Les Vaches, is a detached rock with 18 feet water over it.

Cow Rocks are fairly steep on the seaward side, the 10-fathom line being about 400 yards outside them; in thick weather, therefore, a vessel, passing along the coast, should not shoal the water to less than 15 fathoms, nor to less than 20 fathoms to insure passing outside Red Island.

Coast.—From Crow Head the cliffs fall quickly to a low shore, which continues to Three Rocks Point, a distance of 2 miles. In the shallow bight here formed there are a few fishermen's cottages.

Three Rocks Point is easily recognized by the three rocky islets off it (the westernmost being 14 feet above high water) and by the store and huts on the beach inside. Some shelter is here given by the rocks, and landing may be effected when not practicable elsewhere in the locality, but a very heavy sea rolls along the whole of this coast with winds westward of SW.

Shoals.—Off Three Rocks Point the 5-fathom line extends in a westerly direction for 1,300 yards, and 800 yards N. 84° W. (N. 56° W. mag.) from the highest islet there is a patch having over it a depth of 2½ fathoms. NE. of the point a shelving ledge extends ½ mile from the shore, and outside this the 3-fathom line, over very foul ground, extends for 800 yards; the coast in this locality should therefore be approached with caution.

Cow Rocks open of Cape Cormorant, bearing about S. 37° W. (S. 65° W. mag.), leads nearly ½ mile west of the 2½ fathom patch, in from 12 to 15 fathoms water.

Coast.—The coast, extending in a northeasterly direction from Three Rocks Point, gradually rises, in clay cliffs, to a height of 230 feet and then falls again to a slight projection known as Red Point, from which low cliffs continue to Clam Bank Cove. The whole of this part of the coast is fronted by rocky ledges, and shoal water extends for about 600 yards, but between Red Point and Clam Bank Cove the 5-fathom line is nearly ½ mile offshore.

There is a small lobster factory 1½ miles from Three Rocks Point, on a stony beach known as Salmon Cove, and a few settlers' cottages along the shore, the inhabitants living principally by cod fishing.

Round Head, a remarkable hill behind the coast just referred to, has three distinct conical summits, the middle and highest being 880 feet above the sea. The seaward face of this hill forms a perpendicular cliff, which, together with the conical summit over it, makes a conspicuous landmark.

The southern slope and summit of Round Head are thickly wooded with spruce, pine, and birch; the hill falls rather steeply to a ravine just behind it, from which a small stream runs into West Bay (Port au Port). Southward the country is composed of thickly-wooded hills and valleys, having a general east and west direction, and culminating in the White Hills, already mentioned.

Clam Bank Cove comprises a small bight in the coast line with a broad stony beach, on which, as well as on the bank behind it,

there are some fishermen's cottages. A ledge of rocks projecting from the point, forming the western end of the bight, gives some little shelter to boats when landing, except at low water; but during strong westerly winds the heavy sea makes landing impracticable.

From this locality there is a rough road, cut through the wooded country, to Port au Port.

Coast.—The western shore of the remarkable tongue of land known as Long Point may be considered to begin at Clam Bank Cove, from which place the extreme of the point is about 12 miles distant. Along this shore there are two small villages, known as Shoal Cove and Black Duck Brook, as well as a few detached cottages of the settlers, who, in this locality, are chiefly of French descent. Between Clam Bank Cove and Black Duck Brook the point is about one mile across, but northeastward of this its average width is not more than 400 yards. It is thickly wooded with dwarf spruce and other stunted trees and bushes, and slopes gently from the eastern side toward the sea. It is fronted throughout nearly the whole of its length by rocky ledges and boulders extending from the shore for distances of 100 to 200 yards, and it is only at rare intervals that a heavy surf is not rolling in on these.

Immediately eastward of Clam Bank Cove the coast line is composed of cliffs 80 to 100 feet in height, which gradually fall to a low shore at the village of Shoal Cove.

(B. A. Chart No. 423.)

Black Duck Brook.—The village of Black Duck Brook, nearly a mile northeastward of Shoal Cove and $4\frac{1}{2}$ miles from Clam Bank Cove, is principally situated on the shores of a sandy bight, where a sharp bend of the coast line in an easterly direction narrows the tongue, forming Long Point, to about 600 yards. Off the point at the western angle of the bend a rocky ledge, dry at low water, extends for a distance of nearly 600 yards and gives some shelter to the bay, except during NW. winds. Shoal water extends from the rocky ledge for nearly $\frac{1}{2}$ mile in a northerly direction; vessels wishing to communicate should therefore approach with caution. Near the point previously mentioned a store with a flagstaff makes a conspicuous mark from seaward.

The inhabitants, principally fishermen, are also owners of several head of cattle and sheep, for which they find pasture in the neighborhood. A lobster factory near the eastern end of the village is worked, during the summer, by a party of French fishermen from St. Pierre. There is a good road to Port au Port.

Long Point.—From Black Duck Brook to the extreme of Long Point the coast presents no conspicuous feature, being composed

of low banks fronted by rocky ledges and boulders. The land slopes from the eastern side of the point, and the narrow flats contiguous to the western shore are generally mere bogs. About $1\frac{1}{4}$ miles from the extreme of the point the surface becomes bare of trees, and is covered with coarse grass, which is usually cut for fodder by the people living in the neighborhood. For the last $\frac{1}{4}$ mile the point is a narrow strip of rocks, from which a tongue of shoal water, forming the bar, extends for a distance of nearly a mile.

Position.—The observation spot, $1\frac{1}{4}$ miles southwestward of the rocky extreme, and on the top of the highest bank directly behind the eastern huts, used during the summer by migratory fishermen, is in latitude $48^{\circ} 46' 28''$ N., longitude $58^{\circ} 46' 37''$ W.

Depths Off Shore.—From off Round Head the 20-fathom line quickly increases its distance from the land, forming a long, narrow, irregular bank of from 17 to 20 fathoms water, extending in a northeasterly direction. Northeastward of this bank the line again approaches the shore, but 6 or 7 miles from Long Point there are some extensive banks of 17 and 20 fathoms.

A long, narrow bank, having over it depths of from 7 to 10 fathoms, extends parallel to the Long Point Shore at a distance of $1\frac{1}{4}$ miles, its southwestern end being 3 miles from Black Duck Brook.

Between this bank and the shore there is another long bank, with depths of 8 to 10 fathoms, while between the two, as well as between the inner bank and the shore, the depths vary from 11 to 14 fathoms.

Cape Cormorant Cliff, seen just clear of the western shoulder of Round Head, bearing about S. 47° W. (S. 75° W. mag.), leads inside the outermost of these banks and up to the mark for entering Port au Port.

Port au Port may be considered to comprise the extensive area southward of a line joining Long Point with Bluff Head, the latter a conspicuous cliffy headland on the main shore. This area is divided at its southern end by a long, narrow, flat projection, appropriately named Shoal Point, into two extensive bays, the eastern of which is only separated from the water of St. George Bay by two narrow strips of stony beach inclosing a shallow lagoon.

The shores of this extensive inlet are very sparsely populated, the major portion of the inhabitants being settled on the southern shore of East Bay and on the narrow neck forming Shoal Point.

The eastern shore has a few settlers, and the Long Point side, in addition to a few permanent residents, is visited every summer by a party of French fishermen from St. Pierre, who remain during the fishing season.

Codfish are caught in large numbers about the bar and on the banks outside, and lobsters abound in the vicinity of Long Point, as well as round the rocky shores of Fox Island and its neighborhood. Two factories for tinning these are established at The Gravels, at the head of East Bay, and one at Fox Island, while ruins of others are at Long Point and Broad Cove.

Several indications of mineral deposits have been found in the neighborhood of Port au Port, and asbestos is being mined in the hills southward of Bluff Head.

Anchorage.—Excepting in Pic à l'Ours Harbor, at the head of West Bay, where the depth is only sufficient for comparatively small vessels, Port au Port can not be considered to afford secure anchorage round any of its shores, although the bottom is generally mud.

Gales from SE. and NE. blow furiously, even during the summer months, and although the eastern shores may, at such times, afford sheltered anchorages, the extreme probability of the wind shifting to the southward and westward renders them insecure, except as temporary stopping places.

During the survey, in the summer and autumn of 1894, it was found that the middle of West Bay, a little southward of Shoal Point, was the preferable anchorage during SW. and NW. gales, as the sea, although heavy, was not so short as in East Bay, and the stiff muddy bottom afforded fairly good holding ground.

In uncertain weather a vessel should avoid anchoring on the Long Point shore northward of Black Duck Brook, for here SE. and SW. winds, which are very prevalent, throw up a short choppy sea, and the bottom, although muddy, is soft, and does not afford such good holding ground as that farther to the south.

Ice.—Port au Port generally freezes early in January and breaks up toward the end of April, but during the winters of 1884, 85, 86 the bay did not freeze; this, however, was a rare occurrence, not having happened before during fifty years. Field ice to any extent never enters the port, and under no conditions inside Fox Island.

Coast.—The NW. coast of Long Point has been already described. Its southeastern shores are more elevated than those on the seaward side, and are, for the most part, composed of cliffs and rocky shores, the former reaching in places an elevation of 114 feet. At $1\frac{1}{2}$ miles inside the extreme of the point a stony beach projects a little southward, inclosing a shallow pond.

In this locality, known as Beach Point, there are a few huts as well as an old lobster factory, and the temporary dwellings of the French fishermen. Further SW. are a few scattered cottages, and abreast the village of Black Duck Brook a wooden tramway lies, on the face of the slope, for facilitating the carriage of goods to the

road leading from the villages, as landing is frequently resorted to here when the weather prevents communication with the shore from the bay outside. It often happens, however, during southerly winds, that landing on the inner side is impracticable owing to the weight of the sea on the rocky shore and the absence of any shelter for boats.

French Bank lies just within the extreme of Long Point; within the 5-fathom contour line it is nearly circular, and has a diameter of 1,800 yards. The depths over it are generally from 4 to 5 fathoms, but there are two small heads on which the least water is 22 feet. One of these is near the middle of the bank, and the other near the southern end. There is a good passage, carrying 9 fathoms water, between this bank and the shore.

American Bank is an extensive shoal of rocks, sand, and gravel, near the middle of the outer part of Port au Port, its northern end being separated from French Bank by a channel 1,400 yards wide, and having in it depths of from 7 to 9 fathoms.

Within the depth of 5 fathoms this bank is $3\frac{1}{2}$ miles in length and $1\frac{1}{2}$ in width at its widest part, which is nearly 2 miles from the southern end.

One mile from the northern end of the bank is a shallow patch, 400 yards long, having over it less than 6 feet water, and on this patch three large boulders are awash at low water; surrounding the patch are depths of $1\frac{1}{2}$ to 3 fathoms.

Near the southern end there is another rocky head with 7 feet water over it, and 2 fathoms around; a shallow tongue, with 9 feet water over it near the end, extends toward the Long Point shore. These shallow spots only break in very bad weather.

At $\frac{1}{2}$ mile southward of the 5-fathom edge, on American Bank, there is a small rocky head with 19 feet water over it.

The left extreme of the high hills, forming the south side of the valley behind Bear Head, just open westward of Shag Island, bearing about N. 44° E. (N. 72° E. mag.), leads between the French and American Banks and into West Bay; Road Point, in line with the SW. extreme of Fox Island, S. 16° E. (S. 12° W. mag.), clears French Bank passing to the eastward, and also the northern end of American Bank; the summit of Bear Head in line with North Rock (off Fox Island), N. 28° E. (N. 56° E. mag.), clears the detached shoal off the south end of American Bank, and leads toward Fox Island in not less than 12 fathoms water.

Coast.—Southwestward of Black Duck Landing the coast continues in cliffs and broken rocky fore shore for $3\frac{1}{2}$ miles to a low bluff named Rocky Point. The whole of this coast, including that to Beach Point, is fairly steep-to, and may be approached to 200 yards, except a little SW. of the landing place and a little east of

Rocky Point, where the shore bank reaches off a little, and in the latter case a rocky head, with 2 fathoms water over it and 3 fathoms around, lies 400 yards from the cliffs.

Southward of Rocky Point the shore, now low and intersected by some small streams, turns southeastward, forming West Bay.

West Bay.—The southern portion of this bay is divided into two parts by a rocky spur, the extremity of which is locally known as South Head. Eastward of it is a bight about two miles in length by $1\frac{1}{2}$ in width; westward a low fore shore of sand and shingle extends toward Rocky Point. A few settlers reside round this shore, in which there are several small streams, the largest being Harry Brook, $2\frac{1}{2}$ miles from South Head, and Victor Brook, $1\frac{1}{2}$ from Rocky Point; both are reported to afford good fishing. Behind the shore the heavily-wooded hills rise in long sloping ridges to heights of 700 and 800 feet.

Anchorage.—With the exception of a small patch of $4\frac{1}{2}$ fathoms, near its northeastern part, West Bay is quite free from danger and has a general depth of 7 to 9 fathoms, over a mud bottom. Northeasterly winds blow strongly into it and raise a sea, especially on the ebb tide, but, as already stated, it offers in bad weather the best anchorage, for large vessels, in Port au Port. During easterly winds a berth should be taken up in the middle of the bay, but with those from the westward more shelter will be found in West Road, farther SW.

Pic à Denis (or Head) Harbor is the name given to the bight on the eastern side of South Head. Its western shores are rocky, the wooded hills behind rising steeply to a long ridge extending toward Lower Cove in St. George Bay.

The head of the bight is low, and flat land extends a little distance back toward the hills; the eastern shore is a low bank of peaty soil, forming the western side of Shoal Point. At the head of the bight and on the western side there are two small streams. A settler's dwelling-storehouse and stage are situated on the western shore, $1\frac{1}{2}$ miles South of Southhead.

The flat land at the head of the bay is in some degree cultivated, and a road leads here to Abrahams Cove in St. George Bay; there is also a path leading to Ship Cove, across the neck formed between the hills, which here slope down on either side to a comparatively low elevation. A road leading to West Bay is in progress.

Flats of sand and mud extend off the shores of this harbor for some distance, and as the depth in the center is only $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms it does not afford anchorage to vessels of more than moderate size, although for these the holding ground is good, and the anchorage secure even during strong northeasterly winds.

Supplies.—Limited quantities of meat, butter, and milk may sometimes be procured.

Tides.—It is high water, full and change, in Pic à Denis Harbor at 10h. 20m.; springs rise $6\frac{1}{2}$ feet, neaps rise $4\frac{1}{2}$ feet; neaps range about $2\frac{1}{2}$ feet. There is considerable diurnal inequality in the height of the tides at Port au Port, consecutive high waters differing as much as $2\frac{1}{2}$ feet, and consecutive low waters 2 feet.

Tide Streams.—The flood stream runs directly into the harbor, along the western shore of Shoal Point, both it and the ebb having sufficient strength to cause a heavy short sea when the wind is in a contrary direction.

Near the extreme of Long Point the ebb stream sometimes runs at the rate of 2 knots an hour, setting along the shore to the NE., and turning westward across the bar, where it causes eddies and overfalls; outside this stream runs to the westward.

Shoal Point, the long projection dividing the lower half of Port au Port into two parts, is a long flat spur extending from the range of hills of which Pierways Hill, over St. George Bay, is the summit. This spur gradually decreases in elevation until, about 2 miles within the extreme of the point, it becomes a flat about 15 feet above the sea, with straight peaty banks on either shore. The inner part is wooded, but the outer part, for about 2 miles, is covered with moss and coarse grass.

A little over $\frac{1}{2}$ mile inside the extreme point the grass-covered bank ceases, the remainder being but a low shelf of sand inclosing muddy spaces into which the tide flows. Off the western side of the point the shoal water shelves away gradually into 5 and 6 fathoms 850 yards distant, but off the eastern side it extends $\frac{1}{2}$ mile, and to the northward a large flat of sand, with several boulders on it that dry, extends, within the 5-fathom line, about $2\frac{1}{2}$ miles. This flat, over the greater part of which there is less than 15 feet water, offers a material obstruction to the navigation between East and West Bays, particularly in thick weather, as then the low shore of Shoal Point is most difficult to make out, and the lead is the only guide.

In clear weather the summit of Round Head over the first rise in the trees, just north of Rocky Point, bearing about S. 70° W. (N. 82° W. mag.), will clear the north end of the flat; but as this mark leads close to the tail of American Bank, it should not be carried too far in that direction. A better mark, when it can be distinguished, is a flat-topped distant mountain over the low wooded bluff falling into Fox Brook, N. 88° E. (S. 64° E. mag.); this is easily recognized except when the sun is in that direction.

From a depth of 5 fathoms, at the eastern corner of Shoal Point Flat, depths of $5\frac{1}{2}$ and $5\frac{1}{2}$ fathoms extend in a narrow ridge

toward the south end of American Bank. A small head, with 4 fathoms water over, and 6 and 7 fathoms around it, lies $1\frac{1}{2}$ miles N. 78° W. (N. 50° W. mag.) from the end of Shoal Point.

Coast.—From the extreme of Shoal Point the coast forming the western side of East Bay extends southward for about $3\frac{1}{2}$ miles in low peaty banks and a narrow sandy beach; thence it turns to the eastward and, after about $1\frac{1}{2}$ miles of sloping shore, becomes rocky and forms, just west of The Gravels, three small deep bays. Behind the fore shore the land rises gently in more or less wooded slopes to the summit of the ridge extending eastward from Pierways Hill. At $3\frac{1}{2}$ miles westward of The Gravels there are a few cottages and a schoolhouse, forming a small settlement named Boswarlis, where limited supplies of meat, butter, etc., may generally be obtained during the late summer and autumn.

The Gravels is the name given to the locality in the vicinity of the narrow neck separating Port au Port from St. George Bay; from one of the lobster factories here there is almost daily communication with the several fisheries round the shores of Port au Port by means of small steamers.

East Bay is more extensive and has deeper water than West Bay, a considerable portion of it having depths of over 20 fathoms. The eastern shore for about 3 miles above The Gravels is tolerably steep-to, and behind the land rises to a conspicuous ridge or plateau, terminating at its southwestern end in Table Mountain, the highest summit of which attains an elevation of 1,210 feet. Northeastward this plateau rises to 1,360 feet before it gradually falls to the valley of Fox Brook. Its western face is bare, gray rock, which, in contrast with the dark trees on the lower slopes, makes it a conspicuous feature in the landscape.

There are a few settlers occupied in fishing and farming along this shore, in the neighborhood of a lagoon locally known as Two Guts.

Anchorage.—The anchorage off The Gravels is by no means secure, although the bottom is muddy, owing to the deep water running close to the shore, and the consequently heavy sea that sets in during bad weather from the northward or westward.

Two Guts Barachois, a shallow lagoon on the eastern shore of Port au Port, about 5 miles from The Gravels, is separated from the sea on its western side by a narrow strip of sandy beach. At the southern end there is a narrow opening, but a bar off this dries at low water.

East Road, just southward of Two Guts Barachois, is probably the best anchorage on this side of the bay during the strong NE. to SE. winds which so frequently blow here. The bottom is mud, and a vessel may take a berth as convenient, but, should the wind

haul to the southward, with a falling barometer, as it usually does, it would be prudent to seek anchorage in West Bay.

Road Point is a long rounded projection of the coast, about $7\frac{1}{2}$ miles NNE. of The Gravels, and $1\frac{1}{2}$ miles from Two Guts Barachois. Its seaward face is composed of steep, red clay banks, 20 feet high, and behind them the ground is covered with coarse grass and clumps of dead trees. An extensive tract of comparatively level country, thickly wooded, reaches from Road Point to the high stony plateau already referred to, and is bounded on its northern side by Fox Brook.

Abreast Road Point the shore bank of 3 fathoms turns off the land and follows the line of shore, at a distance gradually increasing to 1,200 yards, closing in again a little northward of Fox Brook.

Anchorage.—Indifferent anchorage may be obtained north of this bank, in 10 fathoms water, over mud, with the entrance to Fox Brook bearing S. 45° W. (S. 17° W. mag.), distant 1,800 yards, but it is only safe during southerly and southeasterly winds and with fine weather.

Fox Brook, the entrance to which lies $1\frac{1}{2}$ miles from Road Point, is the largest stream running into Port au Port, but although the water inside its mouth is deep enough for a ship's boat, it is fronted by a bar which dries from one to two feet at low water. Another small stream, coming from the NE., flows into the sea through the same outlet.

A few hundred yards inside its mouth the stream is obstructed by some banks of sand and shingle, as well as by some low marshy islets which extend up for more than a mile; beyond these the stream turns to the eastward, flowing along the foot of a thickly-wooded ridge, the western angle of which makes, from the westward, as a steep wooded bluff. This has been referred to as a leading mark (page 238).

Coast.—Northward of Fox Brook the coast is rocky, and continues in low cliffs to the western point of Broad Cove, a distance of $3\frac{1}{2}$ miles. It is fairly steep, and may be safely approached to the distance of 600 yards.

Near the shore there are a few cottages, and the land behind rises, in thickly-wooded slopes, to a considerable elevation.

Bluff Head is a very conspicuous headland, showing a perpendicular cliff to seaward, its summit attaining an elevation of 1,630 feet above the sea. From it, and from the higher summits eastward of it, the hills slope down, forming deep gullies and water-courses toward Broad Cove, a small indentation in the coast line. At the southern side of this cove, near a small stream, there is a cluster of buildings, used at one time as a lobster factory, and

which now form a definite mark for crossing the bar on a compass bearing.

The cove is foul and rocky, and from its western point a ledge extends nearly 400 yards. A path leads from this locality to the asbestos mines, a little behind Bluff Head, the distance by it being about $1\frac{1}{2}$ miles.

Fox Island, about $\frac{1}{2}$ mile in length by 600 yards in width, and reaching, near the middle of its length, a height of 145 feet, is situated in the northern part of Port au Port, $4\frac{1}{2}$ miles from Long Point; the grassy slopes on its western side, being in strong contrast to the dark clumps of spruce still standing about its summit, render it conspicuous.

The southern end is cliffy for about $\frac{1}{2}$ mile, and east of this a steep bank is fronted by a small shingle beach occupied by the buildings appertaining to a lobster factory; beyond this the shores are rocky with shelving ledges off the points, while two steep bluffs alternating with grassy slopes occupy the western side. Southeastward the island is quite steep-to, and the same southwestward, outside a steep rock off the extreme end, but to the northward shoal water extends for some distance.

Anchorage.—Fairly good anchorage will be found, a little eastward of the beach on the SE. side of the island, in from 11 to 13 fathoms water, over mud; but it should not be resorted to during strong winds between SE. and SW., as then a heavy sea is produced, especially on the flood tide.

Tides.—It is high water, full and change, at Fox Island at 10h. 15m.; springs rise $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet; neaps range 2 feet.

Tidal Stream.—The flood stream sets to the SSW., through the passage between the island and the mainland; the ebb to the NNE. and across Fox Tail.

Fox Tail comprises the rocky banks and shoals off the north end of Fox Island. Within a depth of 5 fathoms it extends to 2 miles from the island, with a breadth near its outer part of one mile.

At 400 yards NE. from the NE. end of the island there is a ledge 300 yards in length, which dries at low water, and 400 to 600 yards in a northwesterly direction from this are two small rocks awash at low water; round the outer of these the depths are from $3\frac{1}{2}$ to 4 fathoms, outside of which, as well as off the long ledge, the bank is quite steep-to.

White Rock lies near the outer part of Fox Tail, the least water over it being 7 feet at a distance of $1\frac{1}{2}$ miles from the island. From this depth the 3-fathom line extends in a northerly direction for 700 yards and toward the island for an equal distance, leaving, between it and the outermost dry rocks mentioned above, a channel 800 yards wide, and carrying $3\frac{1}{2}$ and 4 fathoms water.

The west extreme of Bear Head, in line with the west extreme of Shag Island, bearing N. 26° E. (N. 54° E. mag.), clears the Fox Tail in not less than 9 fathoms water, and leads through the channel between Fox Island and Road Point.

North Rock, a small detached rock, 6 feet above high water, lies near the edge of the Fox Tail, 900 yards N. 17° W. (N. 11° E. mag.) from the NW. point of Fox Island, and 800 yards N. 88° W. (N. 60° W. mag.) distant from it is a detached rock having over it 16 feet at low water, with depths of 8 to 10 fathoms around. This rock is in the fairway for vessels passing between American Bank and Fox Island.

Directions.—In clear weather vessels from the southward intending to enter Port au Port may, after passing the village of Black Duck Brook, steer so as to bring the tangent of Cape Cormorant Cliff just outside the western shoulder of Round Head, bearing S. 47° W. (S. 75° W. mag.). This mark should be adhered to by a large vessel until Road Point comes in line with the SW. extreme of Fox Island, S. 16° E. (S. 12° W. mag.), when she may either proceed on that mark or steer across for Broad Cove.

Smaller vessels may haul in across the bar in about 6 fathoms water when the houses in Broad Cove bear S. 56° E. (S. 28° E. mag.), or when the highest summit, immediately south of Bluff Head, comes over the low part of the southwestern slope of the Bluff Head Cliff, about S. 62° E. (S. 34° E. mag.).

If desirous of proceeding to West Bay, the mark, Road Point in line with the SW. extreme of Fox Island, should be steered on until the left extreme of the hills forming the south side of the valley, behind Bear Head, is just open westward of Shag Island, bearing N. 44° E. (N. 72° E. mag.); this will lead between French and American Banks and down to West Bay.

If wishing to anchor off the fishing station, inside Long Point, a vessel crossing the bar as advised above may haul to the southward when the stony projection of Beach Point comes open, bearing S. 38° W. (S. 66° W. mag.), and, giving the shore a berth of about 400 yards, anchor as convenient, observing that soundings of over 10 fathoms will indicate that French Bank has been passed.

Should a vessel desire to proceed to The Gravels, it would be prudent, if of deep draft, to steer across toward Broad Cove until the west extreme of Bear Head comes in line with the west extreme of Shag Island, bearing N. 28° E. (N. 56° E. mag.). This mark will lead clear of the Fox Island Shoals, and also of the shoal water off Road Point; when the latter has been passed, a course may be shaped for the isthmus.

To pass between Fox Island and American Bank, a small vessel may take the channel eastward of the 16-foot patch off North Rock

by keeping on the line of Road Point touching the SW. extreme of Fox Island, bearing S. 16° E. (S. 12° W. mag.), until North Rock comes in line with the western point of Broad Cove, N. 69° E. (S. 83° E. mag.), then hauling to the SW., toward the western part of East Bay, until Fox Island is passed, when a course may be shaped for the isthmus.

For a large vessel this passage is not advisable, as the tide runs strongly at times, and the passage, with a depth of 5 fathoms, is only 300 yards wide. There is no good mark available for passing between the 16-foot patch and American Bank. The chart and soundings must, therefore, be the only guide.

(B. A. Chart No. 2876.)

Coast.—From Bluff Head a cliffy coast line, backed by high, rocky hills and deep gullies, extends in a northerly direction for about 2 miles to a rounded point, off which there is a conspicuous pinnacle rock 22 feet high. This portion of the shore is steep to and may be safely approached to 400 yards, but in strong offshore winds the neighborhood of Bluff Head is subject to squalls of great violence, and, under these circumstances, sailing vessels should keep some distance from the land.

Immediately north of Bluff Head Cliff, and on the face of the steep, wooded slope, $\frac{1}{4}$ mile back from the shore, are the houses occupied by the workmen employed in the asbestos mines now being developed in the vicinity.

From abreast the pinnacle rock above mentioned the coast, turning a little to the eastward, continues for $1\frac{1}{4}$ miles to Lewis Brook, where the cliffs cease, being here replaced by a more or less steep clay bank, with a general height of about 70 feet.

From Lewis Brook the coast turns again a little to the northward, and continues in the bank above mentioned and fronted by a stony beach to Deadmans Brook, a small stream coming from a deep gully in the cliffy ranges, which here run parallel to the shore, $\frac{1}{4}$ mile distant. Behind these the land rises, in bare and scrub-covered hills, to a height of 2,700 feet.

From Deadmans Brook the same coast features prevail for $3\frac{1}{4}$ miles to Rope Cove. At $1\frac{1}{4}$ miles from the former is Molly Ann Cove, where another small stream flows into the sea and there are one or two huts occupied during the summer by fishermen. The whole of the shore, from Lewis Brook northward, is fronted by a bank of sand, stones, and rocks, the 3-fathom line extending to a distance of 400 yards from the beach.

Behind Molly Ann Cove the high range of hills turns abruptly to the eastward, and near the angle thus formed is a high conspicuous summit, named Mount Barren, showing a bare perpendicular

cliff to seaward. At $\frac{1}{2}$ mile northward of Mount Barren there is a detached summit, 1,530 feet in height, which shows a conical peak when seen from the eastward, and forms a useful leading mark for clearing the Long Ledge and Round Reef.

Shag Island lies abreast Deadmans Brook, $1\frac{1}{2}$ miles distant. It is $\frac{1}{2}$ mile in length NNE. and SSW., by $\frac{1}{8}$ of a mile in width, and rises, in broken cliffs, to a height of 180 feet. It is quite steep to on the southeastern side, and off its northwestern side shoal water extends for only a short distance, but the southwestern extreme should not be approached within 200 yards. The summit of the island is covered with coarse grass and slopes toward the northern end, on the east side of which there is a good landing place for boats.

Anchorage.—Between the island and the mainland there is a good clear channel, and during fine weather very fair anchorage may be found off its northern side in 12 fathoms water.

Round Reef, the top of which lies 2 miles S. 70° W. (N. 82° W. mag.) from the summit of Shag Island, is a dangerous rocky ledge, having only 4 feet at low water over its shoalest part; it breaks very heavily in bad weather. From this spot the ledge extends in a southwesterly direction, the limit of 3 fathoms being $\frac{1}{2}$ mile distant. Northeastward from the shoalest spot the 3-fathom line is $\frac{1}{2}$ mile distant, while depths of $5\frac{1}{2}$ and 6 fathoms extend nearly across to Long Ledge.

The conical peak (see top of page) in line with the northern extreme of Shag Island, bearing N. 77° E. (S. 75° E. mag.), clears Round Reef, passing to the northward; and the snout of Bear Head in line with the inner summit of Little Port Head, about N. 30° E. (N. 58° E. mag.), leads midway between the reef and Shag Island.

Shoals.—At $1\frac{1}{2}$ miles from the top of Round Reef in a southwesterly direction, and $2\frac{1}{2}$ miles from the Pinnacle Rock, there is a small shoal; with $4\frac{1}{2}$ fathoms water over it, and 5 to 6 fathoms around; and one mile in a northerly direction from Round Reef, there is another small patch, on which the depth is 5 fathoms, and $5\frac{1}{2}$ to 6 fathoms between it and the reef.

Long Ledge is a long narrow ledge of rock extending in the line of Long Point and separated from it by a channel $3\frac{1}{2}$ miles wide, having in it depths of from 6 to 9 fathoms. The middle of the ledge lies $4\frac{1}{2}$ miles off the main shore, $3\frac{1}{2}$ miles from Shag Island, and 2 miles from the top of Round Reef. Its total length, inside the depth of 3 fathoms, is $3\frac{1}{8}$ miles; a portion of it, $1\frac{1}{2}$ miles in length and with an average breadth of less than 100 yards, dries at low water, and on this are some small detached patches and boulders from 4 to 6 feet above high water.

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gerous tongue of shoal water extends for nearly 2 miles, at the
northeastern end of which the 5-fathom line is $\frac{1}{2}$ mile from the
rocks.

Although Long Ledge is generally visible from some distance,
owing to the breakers, at spring tides with very calm weather it
may not be seen. Mount Virgin, kept well open of Bear Head,
bearing N. 45° E. (N. 73° E. mag.), leads west in from 11 to 13
fathoms water; and the conical peak, near Mount Barren, over the
center of Shag Island N. 72° E. (S. 80° E. mag.), clears the south-
western extreme in depths of from 6 to 7 fathoms, but this mark,
leading on to the northeastern edge of Round Reef, should not be
continued on too far.

Anchorage.—Long Ledge is fairly steep on its eastern and
western sides, and during northwesterly winds good anchorage
may be obtained under its lee, in from 8 to 10 fathoms water.

Rope Cove, a small indentation where there is a stream and a
few buildings used by fishermen during the summer, has indifferent
landing, although there is sometimes less swell at the head of the
bight than on the adjoining coast. At $1\frac{1}{2}$ miles southwestward
and 800 yards from the shore, there is a patch of stones and bowl-
ders, on which the depth is 20 feet.

Coal River lies $1\frac{1}{2}$ miles northeastward of Rope Cove, the shore
between comprising a narrow stony beach, backed by low cliffs,
behind which there are extensive marshy barrens with numerous
small ponds and occasional clumps of trees.

The entrance to the river is at the eastern side of a bight in the
shore line and close to a remarkable detached rock, 77 feet high,
locally known as the Friar.

On a sandy spit, projecting from the cliff, on the northeastern
side of the entrance, there are several houses, only occupied during
the summer by fishermen from Bay of Islands.

The river entrance has a bar, nearly dry at low water, but inside
this the stream is about 100 yards wide, with a deep channel run-
ning up to the first bend, $\frac{1}{2}$ mile from the mouth. At $\frac{1}{2}$ mile be-
yond this a small stream flows in from the NE., and here the bed
of the river is obstructed by banks of gravel and stones. With a
bend to the SE. and east the stream gets narrower and more
obstructed to a distance of about 2 miles from the sea, when it
again becomes wider and deeper, and some 5 or 6 miles back it
opens into a series of extensive ponds. The fishermen living at the
entrance carry their small boats to the rapids (about 2 miles up)
during freshets, and are there able to reach these ponds at any
time for hunting and fishing.

Anchorage.—The 5-fathom limit extends $\frac{1}{2}$ mile from the shore off the mouth of Coal River, and outside it there is indifferent anchorage, but only during fine weather, for even with strong southeasterly winds there is usually a heavy ground swell, which becomes an ugly sea when the wind hauls to the westward.

(B. A. Chart No. 2884.)

Coast.—From Fish Head, the corner of the bight of Coal River, to Bear Head the coast is composed of cliffs more or less broken at first and then higher and more formidable as the land rises behind; these cliffs are quite steep to and may be approached closely in fine weather, but in bad weather the heavy sea above referred to appears to be even heavier in this locality.

Off Coal River Head, $1\frac{1}{2}$ miles from Fish Head, there is a bank, with 8 fathoms water over it, about $1\frac{1}{2}$ miles in length and the same distance from the cliffs; between, the depths are from 15 to 16 fathoms.

(H. O. Chart No. 597*.)

Bear Head is very conspicuous when seen from the southwestward, assuming, from that view, the form of a crouching animal. A remarkable projecting mass of rock on its northern summit resembles the ears, and a conspicuous perpendicular cliff, partially detached from the shore underneath, has the appearance of an up-turned snout.

The northern summit is 1,210 feet above the sea, falling in a perpendicular cliff; the southern summit is 1,255 feet high, but being fronted by a shelf of sloping ground terminating in a low cliff, its appearance, when passing, is not so striking. Behind, the summits of the head slope rapidly down to the Coal River Valley, in which there are several ponds.

Eastward of this valley the broken, barren-looking hills rise to a considerable elevation, the two rounded summits lying in a SE. by E. direction from Bear Head being conspicuous from seaward.

Depths Off Shore.—The line of 20 fathoms passes Long Point at a distance of about 3 miles, and continues to abreast the southern summit of Bear Head, when it rapidly approaches the shore. One mile inside this line, in the neighborhood of Long Point, a long narrow tongue, with 8 to 10 fathoms water over it, extends to abreast the dry portion of Long Ledge. Outside there is an extensive flat with depths of 21 to 25 fathoms over it, and having some irregular ridges of 18 to 20 fathoms. Abreast of Long Ledge this flat reaches off to a distance of 22 miles from the main shore, and about 13 miles outside Long Point. Here the depths gradually increase and the deeper water approaches the land in an easterly direction.

Bear Cove, on the north side of Bear Head, contains two yellowish rocky islets, that are scarcely seen against low cliff of the same color, forming the bottom of the cove.

Mount Virgin, 1,590 feet high, is a remarkable isolated column on the coast range, 6 miles from Bear Head, forming a good mark of recognition for this vicinity. Wild Cove (Capelan Bay) is at the south extreme of a high peninsula, 754 feet high, the north extreme of which is Vide Bouteille Cape; the bay has a beach of broken white coral.

Little Port extends 600 yards SSE. from Vide Bouteille Cape, is narrowed to 100 yards in the entrance, and expands at the head to 200 yards wide. It is frequented until 20th June by French fishing vessels that moor head and stern, and leave to follow the codfish that disappear about that time from this neighborhood.

Anchorage for small vessels may be obtained in $2\frac{1}{2}$ fathoms water, over sand and mud, but SW. and SE. winds are accompanied by violent squalls, and north winds bring a sea into the harbor, so that the entrance is dangerous for boats always, and for vessels in spring and autumn.

Tides.—It is high water, full and change, at Little Port at 10h. 43m.; springs rise $5\frac{1}{2}$ feet.

Woody Bay, $\frac{1}{2}$ mile from Little Port, is about 400 yards in diameter, and only suitable for boats, and they even experience considerable difficulty in entering with westerly winds.

Miranda Cove, a small-boat creek with a fishing establishment, is 300 yards north of Woody Bay.

Bay of Islands.—This extensive inlet is one of the most picturesque localities in Newfoundland, from the high hills surrounding, the steep, high islands within, and the deep and tortuous arms which trend from it.

Communication.—The Newfoundland, Northern and Western Railway skirts the south shore of Humber Arm between Brake Point and Birchy Cove, and the Costal Steamship Company's steamer calls fortnightly at some of the ports in the Bay of Islands.

Ice.—The most of the arms in the Bay of Islands freeze between 20th December and 20th January, and break up suddenly between 20th April and 10th May; field ice clears away early or late in May, according to the season.

Devil Head, $1\frac{1}{2}$ miles southwestward of South Head, rises in black perpendicular cliffs to an elevation of 815 feet, but the inshore slope of the headland is covered with grass, which shows in vivid contrast to the dark cliffs.

South Head, bold-to and falling in steep black cliffs, has several pinnacles of light-colored rock situated at the base, the

highest, 110 feet high, named The Monkey, being at the north extreme.

South Head trends SE. by E. to White Point, and thence south $1\frac{1}{2}$ miles to the entrance of Lark Harbor.

Lark Mountain, 1,583 feet high, is the summit of the promontory terminating in South Head.

Guernsey Island, 1,053 feet high, is the southern of the group lying in the entrance to the Bay of Islands; it is mostly barren, but there are a few trees near the south extreme, where is the best landing place in ordinary weather.

Tweed Island, separated from the north extreme of Guernsey Island by a clear passage $\frac{1}{2}$ mile wide, has a bare summit, 702 feet high, falling in black perpendicular cliffs to the north shore.

A round rock, 2 feet above high water, lies close to the SW. extreme of Tweed Island, and a rock, that uncovers 4 feet at low water, lies nearly 200 yards southwestward of the round rock.

During the summer temporary huts are built on the east shore for the accommodation of fishermen.

Anchorage.—Temporary anchorage, on the east side, may be obtained off the cove between Grassy and Little Grassy Islands, in from 9 to 12 fathoms water, and also off the cove on the north shore, in from 8 to 11 fathoms, but a heavy sea rises rapidly with westerly winds.

Hen Island, nearly 800 yards north from the NW. extreme of Tweed Island, is covered with grass and surmounted by a round hummock 222 feet high.

A rock, with 4 feet water on it, lies 865 yards S. 77° E. (S. 49° E. mag.) from the south extreme of Hen Island.

Green Island, also known as Woody Island, is surmounted by a round hill 415 feet high, covered with moss at the summit; there is a small cove on the west side of this island, containing several rocks.

Saddle Island, formerly known as Shag Rocks, is $\frac{1}{2}$ mile from the north extreme of Green Island, and formed by two masses of rock, connected by a narrow ridge; the southern, 170 feet high, is round and covered with grass and a few stunted trees, while the northern is bare and rugged, with a square pillar 150 feet high on the north side, which is prominent when seen from the eastward or westward.

Gregory Island, 245 feet high, is nearly 2 miles NE. by N. from Saddle Island, the channel between being free from danger.

A pinnacle of rock, 52 feet high, lies 150 yards southwestward of Gregory Island, and is nearly joined to it by reefs at low water, and close SW. of this pinnacle is a small round islet.

Brandies Rocks, a cluster 250 yards in diameter, the center of which is $\frac{1}{2}$ mile N. 30° E. (N. 58° E. mag.) from the east extreme of Gregory Island, shows by breakers with a slight swell and the easternmost uncovers 2 feet at low water. The NE. extreme of Saddle Island, open west of Gregory Island, bearing S. 17° W. (S. 45° W. mag.), leads west; and Little Shag Rock, in line with the middle of the entrance to Lark Harbor, S. 15° W. (S. 43° W. mag.), leads between the rocks and the mainland.

Pearl Island, the largest of the group in the entrance to Bay of Islands, is 845 feet high. Four curious pillars (the highest of which is 597 feet above high water) stand on the east side of the island, on the north side of a deep valley which divides them from the hill over the south extreme. Shivery Point, the north extreme, has a rock, with 5 feet water on it, 200 yards eastward of it.

Big Island Cove, on the NE. side of the island, has small beaches of shingle at the head, on which huts are built in summer for the temporary accommodation of the fishermen who frequent the cove. The water is deep, except close to the shore, preventing any but small vessels from anchoring off this cove.

Cloué Patches.—A rock, with 4 feet water on it, lies near the west extreme of a bank, having over it depths of less than 10 fathoms, and extending $\frac{1}{2}$ mile westward from the west side of Pearl Island.

A rock, with 7 feet water over it, lies 265 yards from the above-mentioned rock in the direction of the waterfall.

A bank, with $5\frac{1}{2}$ fathoms water on its south end, lies 1,700 yards westward from the north extreme of Pearl Island.

Shag Rocks consist of two groups; the northern cluster comprises a round islet 20 feet high, lying $\frac{1}{2}$ mile S. 54° E. (S. 26° E. mag.) from the SE. extreme of Pearl Island, with low rocks extending 100 yards northwestward and 300 yards southeastward from it; the southern group consists of a flat bare islet, 19 feet high, lying 800 yards S. 24° E. (S. 4° W. mag.) from the highest of the northern group, with low reefs extending 200 yards to the northwestward and eastward for a distance of 700 yards from it.

Lark Harbor, $2\frac{1}{2}$ miles from South Head, is formed by a long peninsula, the summit of which, Mount Tortoise, is a round hill 787 feet above high water. The harbor stretches to $1\frac{1}{2}$ miles to the southwestward with a slight bend, is $\frac{1}{2}$ mile wide, and has several houses and piers on the north shore. Low Point, where a church is in course of construction, is on the north shore, one mile within the entrance, and has a spit of shingle, which dries in places, extending from it about $\frac{1}{2}$ mile SSW. Low Island, small and 3 feet high, is on this spit; and at 600 yards eastward of Low Island shoal water extends about 300 yards from the north shore.

Beacons.—Two beacons, erected on the southern shore of the harbor, when in line, bearing S. 50° W. (S. 78° W. mag.), lead into the inner harbor.

Anchorage may be obtained in 13 fathoms water, over mud, about 300 yards NW. of Rocky Point, or farther SW. in 6½ fathoms, mud, with excellent holding ground; winds from NE. bring a little sea into this anchorage, and heavy squalls sweep down Lark Mountain with south and SW. winds, so that South Head should not be approached too closely.

Tides.—It is high water, full and change, in Lark Harbor at 10h. (approximate); springs rise 6 feet, neaps rise 5 feet.

York Harbor, south of Mount Tortoise, is between it and the foot of Blow-me-down, a conspicuous hill. The anchorage is sheltered by Governor Island, lying nearly in the center. Sword Point, the west extreme of the island, is a small projection with a sand spit 300 yards from it, and the next point south of Sword Point is shallow 400 yards from the shore.

Governor Island is wooded on the shores, but inland there is a large marsh with a lake and some ponds, and a few tufts of trees rise above this marsh, the highest being 95 feet above high water.

Anchorage may be obtained, in from 6 to 11 fathoms water, between the SW. side of Governor Island and the mainland, with perfect shelter, but heavy squalls come from Blow-me-down with southerly winds.

Seal Island, 75 feet high and nearly joined to the NE. extreme of Governor Island, is continued eastward 200 yards by rocks awash at low water.

Blow-me-down, 2,125 feet high, falls almost perpendicularly from the summit; and then in a steep wooded slope from the base of the cliffs to the shore. The range trends to the southeastward in a line of cliffs, from the foot of which long slopes, covered with shingle or scrubby wood, descend to the valley at the base.

A deep valley extends to the southeastward at the base of the slopes from these cliffs, down which flows Bear Deadfall Brook, a considerable stream.

A small yellow rock, 6 feet high, lies 150 yards from the shore, at 800 yards westward of the mouth of this brook.

Anchorage.—Temporary anchorage may be obtained north of Bear Deadfall Brook, in 9 fathoms water, at ¼ mile from the shore.

Frenchman Cove, situated immediately westward of the entrance to Humber Arm, is bold-to on its west shore, but from the mouth of the brook at the head to the east entrance point a sand bank and boulders line the shore, extending nearly 150 yards from the high-water line; a small settlement with a few gardens is situated here.

Anchorage.—Anchorage may be obtained in from 11 to 13 fathoms water, over mud, off the east side of the bank of shingle at the head.

Lower Frenchman Head, also known as Spurn Point, falls from an earth cliff 45 feet high, and is continued by a reef 65 yards northward of the high-water line, falling quickly to deep water; from this point the coast trends sharply south to the entrance of Humber Arm.

Tides.—It is high water, full and change, in Frenchman Cove at 10h.; springs rise 6 feet, neaps rise 5 feet; neaps range $3\frac{1}{2}$ feet.

Humber Arm, a picturesque branch of the sea extending 6 miles southeastward, and thence eastward for 7 miles, has, with a few exceptions, bold shores and deep water, affording good anchorage in a few localities only.

The banks, generally, slope steeply from wooded hills, on the sides of which houses are built and fields cultivated, the soil being said to be some of the richest in Newfoundland.

Frenchman Head falls in a steep cliff 220 feet high.

Coast.—The coast from Frenchman Head trends to the southward $3\frac{1}{2}$ miles to Benoit Cove. Nearly midway is a church with a small tower, situated close to the shore, and a small settlement is built at Johns Beach, $\frac{1}{2}$ mile southward of the church; from Fox Point, on the south side of Benoit Cove, the coast trends southeastward for one mile to Halfway Point.

Benoit Cove, formed by a curve in the coast fronting a deep valley that is drained by a considerable stream, has a moderately large settlement, a large storehouse in the eastern part of the cove, and at the head a wooden church with a small spire; shoal water extends for about 200 yards off the mouth of the stream.

Anchorages.—Anchorage may be obtained 200 yards from the east shore, between the large storehouse and Fox Point, in from 10 to 17 fathoms water.

The best anchorage in Humber Arm is off the shore, between Fox and Halfway Points, depths of 10 fathoms being found at 400 yards, and of 20 fathoms at 600 yards off the shore.

A reef extends 300 yards from the shore, at 1,300 yards SE. of Fox Point, and is the only danger in the vicinity. The house on the west side of Cook Cove, open east of Halfway Point, bearing S. 38° E. (S. 10° E. mag.), leads eastward of this reef.

Ice.—Humber Arm freezes about 26th December, and is generally completely closed by ice, from $1\frac{1}{2}$ to 3 feet in thickness, from the end of December to the end of April. Field ice appears about 1st January and disappears about 15th April; the first vessel generally arrives about 12th May, the last vessel leaving about 1st January.

Pleasant Cove, $3\frac{1}{4}$ miles SE. of Halfway Point, and divided from Bannatyne Cove close west of it by a bluff point, is 400 yards wide and 200 yards deep; a shoal surrounds the head at 100 yards distant from the shore.

From the eastern entrance point a wharf projects to the northward, at which the local mail steamer discharges her cargo; to the eastward of this wharf a rock and shoal water extend, 150 yards from shore.

Communication.—The telegraph office in connection with the Anglo-American Company is in the courthouse, a white wooden building on the summit of the slope to the southward of the magistrate's house.

Anchorage.—Anchorage for small vessels may be obtained off Bannatyne and Pleasant Coves, in 10 fathoms water, or less as convenient, the former depth being found at a little more than 200 yards from shore.

Birchy Cove, a small curve in the coast about $1\frac{1}{4}$ miles eastward of Pleasant Cove, may be recognized by a church, a wooden building painted white, with a small spire, and the parsonage, a large two-storied house with a clock in the gable end facing the river; there is no danger beyond a short distance from shore of this cove.

Communication.—Railway to St. Johns and Port Basque.

Supplies.—Fresh provisions can be obtained at Birchy Cove.

Anchorage.—Anchorage may be obtained off Birchy Cove as convenient, depths of 10 fathoms being found at 335 yards, and of 20 fathoms at 400 yards from shore.

Tides.—It is high water, full and change, in Birchy Cove at 10h. 26m.; springs rise 5 feet, neaps rise $3\frac{1}{4}$ feet; neaps range $2\frac{1}{4}$ feet.

Corner Brook, $1\frac{1}{4}$ miles eastward of Birchy Cove, is shoal to the line of De Grouchy Point, the west entrance point, and the wharf, that projects $\frac{1}{2}$ mile from the sawmill at the mouth of the brook. There is a depth of 15 feet alongside the wharf at low water, deepening rapidly to 5 fathoms. A considerable settlement is built near the sawmill.

Humber River.—The Bar, a shallow flat, with two rocks, awash at low water, situated close to its north extreme, extends $\frac{1}{2}$ mile from the head of Humber Arm and falls suddenly to deep water.

Great caution should be used in approaching the Bar, as the lead gives but little indication of the immediate approach.

Three streams discharge into the head of Humber Arm. The deepest and southernmost, named the Humber, which is the second largest river in Newfoundland, flows from Deer Pond, and is navigable for boats when the stream is not too strong. Large rafts of timber are floated down this stream from the neighborhood of Grand Pond.

The hills between Humber River and Wild Cove are flat-topped, and in terraces, attaining an elevation of 1,150 feet, the rock on the western face showing a deep blue color in ordinary weather. The west point of Wild Cove is formed by earth cliffs about 50 feet high, fronting a table-land of good soil, which extends to the base of the hills.

Between Wild Cove and Hughes Brook is a wedge-shaped wooded hill, 942 feet high, falling steeply to the eastward, with a smaller wooded mound 150 feet high to the southward.

Tucker Head, a mound 131 feet high, is situated on the north shore about a mile from the mouth of Hughes Brook.

Irishtown consists of a conspicuous white house and a few other smaller buildings situated round a small cove westward of Tucker Head. Inner Aspen Point is the west extreme of this cove.

Petitpas Cove, $\frac{1}{2}$ mile westward of Rood Point, has a considerable settlement round the shores, and a wooden church, painted white, with a spire. There is also a sawmill and several wharves.

Anchorage.—There are no dangers beyond a short distance from shore, and anchorage may be obtained in Petitpas Cove, in from 13 to 19 fathoms water, depths of 20 fathoms being found at $\frac{1}{2}$ mile from shore, but the holding ground is not very good. The best anchorage is with the church bearing about N. 61° E. (N. 89° E. mag.), in a depth suitable to the length of the vessel. The anchorage here is better than at Birchy Cove for any lengthened stay.

Davis Cove, affording no anchorage for vessels, is immediately westward of Petitpas Cove. It may be recognized by a waterfall above the mouth of the brook emptying into the cove.

Meer Point, 2 miles from Davis Cove, is low and flat, sloping gently from a hill 200 feet high, close to the coast. Between it and Davis Cove are a series of small coves.

A rock, that dries $1\frac{1}{2}$ feet at low water, lies a short distance from the coast midway between Davis Cove and Meer Point.

Guilem Cove is situated $1\frac{1}{2}$ miles northward of Meer Point, at the mouth of a deep valley, drained by a stream, which has formed a shoal extending 350 yards from its mouth.

Anchorage.—Anchorage may be obtained in 12 fathoms water, with the south extreme of the land, near Meer Point, bearing S. 20° E. (S. 8° W. mag.) and the mouth of the brook N. 29° E. (N. 67° E. mag.), at 300 yards from the shore, the depths decreasing gradually to the eastward and southward of this position.

Big Head, the northern entrance point of Skeleton Cove, is a steep cliff falling from a dark wooded cone 448 feet high. Rattler brook flows to the sea in a conspicuous waterfall, 600 yards northward of Big Head.

Maciver Cove is situated northward of Rattler Brook, and Maciver Island, a bare rock, 15 feet high, near the south extreme of the cove, is joined to the mainland by a shoal.

Anchorage.—Anchorage may be obtained between Maciver Island and Rattler Brook, as convenient, depths of 10 fathoms being found at 400 yards and of 20 fathoms at 600 yards, respectively, from shore.

Woods or Harbor Island, separated by a channel, 1,800 yards broad, from the north entrance point to Humber Arm, and by a passage, nearly $1\frac{1}{4}$ miles wide, from shore southward of that entrance, is wooded throughout, the northwestern part rising to a small range of hills 245 feet high, while the central portion gradually attains an elevation of 195 feet.

A small settlement, with a considerable space of cultivated ground attached to it, is situated near the south extreme of the island, and there are several houses on the east and west shores.

A shoal, composed of rock, covered in places with sand, and having depths of from one to 6 feet water over it, extends 350 yards southeastward from the SE. extreme of Woods Island, and deepens rapidly to 6 fathoms water.

Woods Harbor consists of two bays, the western 600 yards, and the eastern 1,000 yards in length, and 400 yards in width.

A reef, that uncovers at low water, extends 100 yards from the south entrance point, and narrows the passage, of 12 feet at low water, to a breadth of 95 yards.

Puffin Islands extend northwestward of the NW. extreme of Woods Island; the southern island has a group of trees on each of its two mounds, which are 91 feet above high water.

The passage between the southern island and the NW. extreme of Woods Island is a few yards wide and only adapted for boats, a rock that uncovers lying in the middle.

Vesuvius Rock, with $1\frac{1}{2}$ feet water over it, is the northwestern extreme of a ledge extending NNW. 750 yards from the north extreme of Puffin Islands. The apparent entrances of Middle Arm, open N. 87° E. (S. 65° E. mag.), leads NE.

Outer Shag Rock, $\frac{1}{2}$ mile eastward of Puffin Island, is a round dark islet 18 feet high.

The passages between the rock and Woods Island should not be attempted.

Middle Arm Point, on the mainland NE. of Woods Island, slopes from a long wooded ridge, and falls in small cliffs, having deep water close to it; a small bight is situated immediately southward of the point, in which are a pinnacle rock and a waterfall.

Middle Arm (formerly known as South Arm) is one mile wide at its entrance between Black and Northern Heads, and expands

within to a breadth of $1\frac{1}{2}$ miles; it extends in an easterly direction for $5\frac{1}{2}$ miles to Penguin Head, and there separates into two branches, the south named Goose Arm, and the northern Penguin (Penman) Arm.

Jennings Cove, $1\frac{1}{2}$ miles eastward of Black Head, is 800 yards deep, but the shores are foul generally for 200 yards from the high-water line.

Anchorage.—Anchorage, as convenient, may be obtained in depths of from 10 to 14 fathoms water, in the middle of this cove, but at the head the depth decreases rapidly from 6 to 3 fathoms at 200 yards from the shore. A few houses are situated in this cove, which is much resorted to for bait by those fishing off the mouth of the bay.

Cox Cove (French Cove), separated from Jennings Cove by Cox Point, has a few houses situated on the beach, and affords temporary anchorage in 16 fathoms water, but a considerable sea sets in during strong easterly winds.

Parkes Cove, one mile southeastward of Cox Cove, affords anchorage as convenient, depths of 20 fathoms water being found at 400 yards from the shore, gradually decreasing to the shoal water extending from the beach.

Water.—Water may be obtained from two streams which flow into the cove.

Long Point, forming the south entrance point to Goose Arm, is bold-to and the low termination of a densely-wooded round hill, 960 feet high.

Goose Arm, extending $2\frac{1}{2}$ miles in an easterly direction, and thence NE. for a farther distance of $4\frac{1}{2}$ miles, is a little more than $\frac{1}{2}$ mile wide in the western bend, decreasing to 200 yards in breadth at The Narrows, but expanding northeastward of The Narrows to $\frac{1}{2}$ mile in width; the shallow basin at the head is $\frac{1}{2}$ mile wide.

Two conspicuous landslips show in the red earth cliff that lines the shore of a cove at the bend of the south side of Goose Arm.

A shoal bank extends from the landslips, increasing gradually to $\frac{1}{2}$ mile in breadth, off the entrance to Big Barasway.

Several large streams flow into the head of Goose Arm, but their mouths can not be approached, even in boats, until half flood.

Raglan Head is a remarkable headland, 1,080 feet high, composed of gray cliff, falling almost perpendicularly to the water on the west side, and sloping to Big Barasway to the southward.

The Narrows are comprised between Raglan Head on the east side and the extreme of the smooth slope of a peaked hill, 611 feet high, on the west side. They are rather more than 200 yards wide from shore to shore, but the navigable breadth is reduced to 100 yards by banks extending from both shores, that from Raglan

Head falling suddenly to the channel, through which no greater depth than $4\frac{1}{2}$ fathoms will be found at low water.

The summit of the eastern Sugarloaf (over the head of Goose Arm), kept in line with the north extremes of William Wheeler Point and of Raglan Head, bearing N. 50° E. (N. 78° E. mag.), will lead between the shoals on either side, until the landslip in the curve south of Big Barasway is in line with the boulders on the apparent south extreme of Raglan Head, S. 21° W. (S. 49° W. mag.), when the middle of the arm may be steered for. A house stands on the west side of The Narrows.

Penguin Cove, situated on the north shore, immediately within the entrance to Goose Arm, is free from danger.

Anchorage.—Anchorage may be obtained in 14 fathoms water 300 yards from the head of this cove, but the holding ground is not good.

Penguin Head, the dividing point between Goose and Penguin Arms, is the extreme of a remarkable flat-topped, isolated, and bare gray hill, 1,020 feet high, which has on it a few trees, and is bold-to.

Penguin Arm (formerly known as Penman Arm) extends with a slight curve $3\frac{1}{2}$ miles northeastward of Penguin Head, and is free from danger, having deep water. There is no secure anchorage for large vessels in this arm, though schooners seeking bait anchor near the shore in the curves of the coast.

Coast.—The north shore of Middle Arm falls generally in gray cliffs fronting densely wooded hills, but has no danger beyond a few yards from the shore.

Seal Cove, on the north shore at $1\frac{1}{2}$ miles from the entrance to Middle Arm, is an indentation 400 yards deep, but affords no shelter, shoal water extending 250 yards from the head.

Old Woman Head, a remarkable hill 1,020 feet high, standing about midway between Middle and North Arms, falls in a steep cliff to the southward and in a sharp fall to the northward, and shows conspicuously over the coast ranges.

Northern Head of Middle Arm falls in a steep cliff about 300 feet high, with curiously thin stripes of quartz following the stratification, which is much contorted. The coast curves to the northward round a small cove, at the head of which is a streamlet, and the striped veins of quartz show as far as North Arm Point. This shore is foul for a distance of 350 yards.

Eagle Island, 112 feet high, lies $1\frac{1}{2}$ miles westward of Northern Head. The west side consists of steep cliffs, striped vertically with red and gray rock, and near the west extreme is a conspicuous mass of sandstone, projecting from the other rock of which the island is composed. The east shore slopes steeply in a grassy sward to a beach of shingle at the base.

Low rocks and sunken dangers extend 200 yards from the north and south extremes.

Fisherman Rock, with 2 feet water on it, lies in the channel between the mainland and Eagle Island, 1,400 yards southward of North Arm Point.

A shoal, with 17 feet water over it, lies nearly in mid-channel between Eagle Island and the mainland. From it the north extreme of Eagle Island bears N. 81° W. (N. 53° W. mag.), distant $\frac{1}{2}$ mile.

North Arm, entered between North Arm Point to the southward and Stowbridge Head to the northward, is nearly 2 miles wide at the entrance, from which it extends with one bend for a distance of 8 miles to the eastward.

North Arm Cove, at $\frac{1}{2}$ mile SE. from North Arm Point, has a beach of shingle at the head.

Anchorage.—The anchorage here is not good, but temporary stay may be made by small vessels, in 14 fathoms water, off the middle of the cove, the water shoaling rapidly from thence to the beach.

An open cove is situated on the south shore of North Arm, $4\frac{1}{2}$ miles eastward of North Arm Point; at its entrance a rocky bank, with 6 fathoms water on it, lies 400 yards from the north shore, and a shoal extends from the south shore, at $\frac{1}{2}$ mile from the head, with depths of from 5 to 7 fathoms water over it.

Harbor Cove, $\frac{1}{2}$ mile deep, and about 300 yards wide, has no dangers except a shoal, with 2 fathoms water over it, extending nearly 200 yards southward from the north entrance point; a small bank, with 5 fathoms water over it, extends a short distance from the south side of the narrowest part.

Water.—Water may be obtained from a cascade which falls into the east side, and from a considerable stream discharging into the head of the cove.

Coast.—The east shore of North Arm, northeastward of Harbor Cove, surmounted by wooded hills from 300 to 400 feet high, is free from danger beyond a short distance from the coast; the water is deep, and there is no convenient anchorage in the whole of this part of the arm, except for small vessels.

At the head is the mouth of a shallow stream, flowing from a deep valley that extends many miles inland, between high ranges of hills.

Stowbridge Head is a square mound, 87 feet high, situated westward of Stone Brook, on the west side of a small shingle beach, on which are some houses.

A black rock, 12 feet high, lies in the cove west of Stowbridge Head, and westward of this the coast falls in small cliffs, with an outlying small islet 10 feet high.

Anchorage.—A few houses are situated on the shores of Liverpool Cove, westward of Liverpool Brook, and anchorage may be obtained, with offshore winds, southward of Liverpool Brook, in 18 fathoms water.

Parkes Rock, with $4\frac{1}{2}$ fathoms water over it and 6 to 8 fathoms around, is $1\frac{1}{10}$ miles southward from the houses in Liverpool Cove; from it North Arm Point is $1\frac{1}{10}$ miles S. 26° E. (S. 2° W. mag.). There is a shoal with 6 fathoms water over it, $\frac{1}{2}$ mile south of Parkes Rock.

Upper Crabb Brook discharges at the north extreme of the curve in a beach of shingle, extending from Buck Head to Crabb Point, and distant one mile from the former; several houses are built close to the mouth of the brook.

A flat of sand and stones extends to the southward, depths of 3 fathoms being found at 200 yards, and of 10 fathoms at 400 yards from the shore.

Middle Crabb Brook is at a shingle point projecting to the southward 800 yards westward of Upper Crabb Brook; $\frac{1}{4}$ mile SSE. of the point is a shoal with $4\frac{1}{2}$ fathoms water on it, the water deepening suddenly to 12 fathoms southward of the shoal.

Lower Crabb Brook, a large stream discharging its waters at the west extreme of the beach of shingle, and draining a deep valley, which extends inland to the foot of the north slope of Mount St. Gregory, has several houses standing close to its mouth.

A bank extends from the shore to the eastward of the mouth of Lower Crabb Brook for 335 yards, to depths of 3 fathoms, falling suddenly from 7 to 30 fathoms at a further distance of 200 yards to the southeastward.

Crabb Point falls in low, dark cliffs from a small wooded hill-ock, 215 feet high, the southernmost extreme of a long, stony ridge, that extends to the northward and culminates in Mount St. Gregory. This is the turning point into the Bay of Islands, and a rock lies close to the south extreme.

Davis Cove, $2\frac{1}{2}$ miles northward of Crabb Point and between Lower Gulf Rock, 22 feet high, and the Friar, 60 feet high, has a considerable stream flowing through the beach of shingle at its head, and is generally a resort of fishermen during the summer, who build temporary huts there.

Beverly Cove, a semicircular basin 100 yards in diameter, nearly $1\frac{1}{2}$ miles northward of Lower Gulf Rock, is shallow and surrounded by black rock, except in a small creek immediately eastward of the south entrance point, where the boats are moored, and sheltered by a reef extending nearly across the entrance; it is generally frequented by fishermen during the summer months.

The Green Handkerchief, a remarkable grassy sward on the cliff, 700 yards from Beverly Cove, shows conspicuously from seaward, being bright green during the summer months, and of a yellow hue during spring and autumn; a similar sward, but much smaller, is a short distance northward of the Green Handkerchief.

A conspicuous waterfall flows over dark black cliffs $\frac{1}{2}$ mile southward of North Head, and from the mouth of this stream a rocky ledge, that nearly dries at low water, extends 150 yards, and makes landing difficult for boats. A small headland, with dark cliffs, in which, at some elevation, is a large cave, lies between the waterfall and the shingle beach extending to North Head; two small streams flow through the shingle beach.

North Head, a low cliff, 54 feet high, composed of red earth, fronts a marshy plateau, that is generally green in summer, at the foot of the slope from Mount St. Gregory; it is fringed by bowlders that uncover at low water, extending to a distance of 200 yards, shoal water continuing for another 300 yards; on this shelf are two rocks, with 2 feet water over them, lying 400 yards N. 87° W. (N. 59° W. mag.) from North Head.

Mount St. Gregory, the highest peak in the neighborhood, when seen from the southwestward presents the appearance of a sharp peak, but from the westward it shows three small, though distinct, summits, the middle and largest one being composed of a mass of stones and bowlders, the top of which is 2,240 feet above the sea.

The western face of the mountain is bare and stony, with deep gullies reaching generally to its base, which lies directly behind the beach. Northward the slopes are wooded and more gradual, falling away toward the valley of the St. Gregory River, about $3\frac{1}{2}$ miles distant.

Tidal Streams.—From observations made in the month of June, 1881, no law could be deduced for the tidal streams in Bay of Islands. On the 13th June (moon's age, 16 days), from 8h. 20m. a. m. till 6h. 45m. p. m. the stream set with a slight curve in an easterly direction from Guernsey Island, while from 9h. 20m. a. m. to 5h. 10m. p. m. of the same day it ran nearly north from Pearl Island, and at the same time set with a velocity of about one knot an hour up Middle Arm.

During the months of May, June, and July the surface stream of Humber Arm ran almost continuously toward the sea, while an undercurrent was found to run in the opposite direction. This northwesterly stream is split by Woods Island, and runs with a velocity of nearly $1\frac{1}{2}$ knots an hour over the shoal at the SE. extreme of that island. The easterly stream also converges to Humber Arm round Woods Island, decreasing in strength on the surface as it nears the river.

Through the Narrows of Goose Arm the tide runs with a velocity of 2 knots an hour at spring tides, the time of turn of stream being irregular with respect to the high water, varying with the direction of the wind and the quantity of water discharged by the streams at the head of the arm.

Near all shoals and banks, especially in the neighborhood of Vesuvius Rock, a stream was found not governed by any apparent law, but attaining occasionally a velocity of $1\frac{1}{2}$ knots an hour close to the shoals, though scarcely perceptible at $\frac{1}{4}$ mile distant from them.

Population.—The residents of the Bay of Islands and neighborhood are of mixed nationality, comprising descendants of deserters from French vessels of war, former inhabitants of the east coast of Newfoundland (principally of Irish descent), and natives of Nova Scotia, the last named being employed principally at the sawmills.

(H. O. Chart No. 1105 and B. A. Chart No. 2834.)

Coast.—From North Head the shore is composed of a stony beach, fringed with rocky ledges and backed by a steep clay bank, behind which rise the slopes of Mount St. Gregory and the hills falling from it. The rocky ledges extend generally about 200 yards from the bank, but there are places, viz, near North Head and $\frac{1}{4}$ mile from St. Gregory River, where it extends to 300 and 400 yards, respectively. At Shoal Cove, $\frac{1}{4}$ mile from North Head, there is a cluster of buildings used as a lobster factory.

Chimney Cove Head, lying 4 miles from North Head, is a slight projection, 450 feet high, forming a perpendicular cliff on its western side; to the SE. it falls toward the river valley in a conspicuous green slope extending from base to summit.

Immediately south is the entrance to St. Gregory River, barred by numerous stones and boulders that dry at low water; it is a small shallow stream, flowing from the hilly country inland. On the south side of the entrance is a low spit of sand and shingle on which are several huts, and a few houses may be seen on the green slopes behind.

Anchorage.—Fair anchorage may be obtained off Chimney Cove, during winds eastward of south, in from 12 to 14 fathoms water.

Cape St. Gregory.—From Chimney Cove Head the coast northward to Cape St. Gregory, a distance of one mile, is composed of cliffs fronted by rocks, some of which are 20 feet in height. Here a shelf of level ground, about 200 yards wide, projects from the higher cliffs and forms the cape, the cliffs of which are 75 feet high. It is steep-to, like all this portion of the coast, but during bad weather there is a very heavy confused sea, and at such time small vessels should keep at least 2 miles offshore.

Coast.—Northward of Cape St. Gregory the coast continues to be formed of high cliffs, behind which are wooded hills and deep ravines. There are few places available for landing, the best being in a small bight known as Rencontre Cove, $1\frac{1}{4}$ miles from Cape St. Gregory; here boats may land safely in any weather, except when blowing from the NW.

In this vicinity a conspicuous cliff, nearly 1,000 feet high, recedes a little from the foreshore and terminates in a series of white rocky hills which mark this part of the coast.

Big Cove Head is a noticeable headland which forms the tangent of the land when rounding Cape St. Gregory. It is 5 miles from the cape and 820 feet high, rising almost perpendicularly from the water; northeastward the high land culminates in a summit, 1,040 feet in height, the eastern side of which slopes quickly down toward Trout River.

Depths Off Shore.—As before remarked, the whole of this shore is steep-to, the 20-fathom line being about $\frac{1}{4}$ mile distant. In the neighborhood of Big Cove Head, however, this line begins to run off the land, forming an extensive bank, $2\frac{1}{4}$ to 4 miles wide, which stretches off in a northeasterly direction. Off the entrance to Bonne Bay the center of this bank, where the depths are from 13 to 15 fathoms, over sand and gravel, is 10 miles from land, with soundings of 21 to 65 fathoms inside it.

A little southwestward of Big Cove Head, and rather more than $\frac{1}{4}$ mile from shore, there is a small patch of 10 fathoms, with 12 and 15 fathoms around, and $2\frac{1}{10}$ miles north from the head there is another patch, known as Trout River Rock, with 13 fathoms water over it and 22 to 24 fathoms around. Both these rocks are favorite resorts of the local fishermen, and during fine weather numbers of boats may be observed anchored near them.

Trout River.—At $1\frac{1}{4}$ miles from Big Cove Head the shore forms a deep bight, in the southern corner of which, sheltered from the sea by a projecting headland, is the entrance to Trout River, a small stream discharging from a series of extensive ponds, which begins a little over a mile from the sea. The river bar has from 2 to 3 feet over it at low water, but it is encumbered by bowlders, and only small boats can cross it.

On a sandy beach at either side of the river's mouth and on the rising bank behind there are several houses, containing about 170 inhabitants, who are engaged in the cod and lobster fisheries.

Communication.—From this settlement there is a rough road to the south arm of Bonne Bay, and the coasting steamer to and from that place occasionally calls off the river during fine weather.

Anchorage may be obtained, with offshore winds, off the middle of the bight in from 9 to 10 fathoms water; small vessels may

go closer in, but when the wind comes from seaward there is usually a heavy ground swell.

Coast.—The coast northeastward of Trout River is cliffy and fronted by low water rocks and ledges, extending in some places 200 yards from land. There are occasional patches of conspicuous red cliff and steep slopes, forming low headlands covered with grass, the bright green of which is, in summer, in strong contrast to the dark spruce-covered hills above.

Immediately over the coast, the hills rise to a considerable elevation, and further inland may be seen the seaward face and upper portion of an extensive table-land composed of sandstone cliffs and rocks quite bare of vegetation, which begins in the vicinity of the large ponds behind Trout River, and reaches across to within $1\frac{1}{2}$ miles of the South Arm of Bonne Bay.

At $3\frac{1}{2}$ miles from Trout River Bight, where one of the green slopes leaves a narrow strip of flat land behind the shore, there are one or two huts. This place is locally known as Green Garden, and during the summer is occupied by fishermen from Bonne Bay.

Off Green Garden the low-water feature extends rather more than 200 yards, with some small detached rocks a little to the northeastward. At $\frac{1}{2}$ mile farther NE. is Skinner Cove, where a small stream runs into the sea; here the very steep slopes rise gradually to 1,000 feet in Western Head, the turning point of the shore toward Bonne Bay.

It is easily recognized from the SW. as being the extreme of the high southern shore, and also by the detached rocks under it, the highest of which is 57 feet above high water.

(B. A. Chart No. 1209.)

Bonne Bay, an extensive inlet, the entrance to which, from Western Head on the south to Lobster Cove Head on the north, is nearly 4 miles across, extends in a southeasterly direction for about 6 miles, then separates into two long deep arms, the eastern being $8\frac{1}{2}$ miles in length, with an average breadth of $\frac{1}{2}$ mile, the western, or South Arm, 4 miles long and a little more than $\frac{1}{2}$ mile wide.

The water in Bonne Bay is generally too deep for anchorage, but there are some parts of it, hereafter referred to, where good shelter may be obtained in a moderate depth of water.

The soundings, in the approach to the bay, are clearly marked by a belt of deep water, in which there are from 60 to 80 fathoms; this belt extends about $4\frac{1}{2}$ miles outside, where, between the 50 fathoms limit, it is 4 miles across.

Sailing vessels entering Bonne Bay during strong southerly or westerly winds should be prepared for the violent squalls that blow off the high land on the southern side.

The principal settlement is at Woody Point, on the west shore, $6\frac{1}{2}$ miles inside the entrance, and the population of the whole bay numbers about 1,200, engaged principally in the cod and lobster fisheries.

Eastern Head, $1\frac{1}{2}$ miles inside Western Head, is high and steep; between there is a long strip of shingly beach at the foot of the cliffs, and off the western end of this there is a detached rock, 200 yards from the shore, which dries $1\frac{1}{2}$ feet at low water.

In this vicinity vessels should not approach the shore within 400 yards. Eastern Head, however, is very steep-to and may be approached closely, as may also be the whole of this shore until within $\frac{1}{2}$ mile of Woody Point.

From Eastern Head the steep shore continues, rising, in high wooded cliffs and steep slopes, to a remarkable cliffy escarpment which culminates in a summit 1,939 feet above the sea; under the middle of this and directly over the shore a large, pinnacle-shaped mass of rock is conspicuous when seen from a north or south direction.

Woody Point, 54 feet in height and projecting from the higher land behind, which here rises in steep slopes, more or less wooded and broken by deep ravines, is easily recognized. For $\frac{1}{2}$ mile outside the point the shore is dotted with houses, and on passing it the village will be seen the English and Roman Catholic churches on the slope over it being conspicuous.

The village contains about 220 inhabitants; there are post and telegraph offices, schools, and churches of the various denominations.

Communication.—The Coastal Steamship Company's steamer calls fortnightly at Bonne Bay during summer and autumn; and alternately there is fortnightly communication by steamer with Halifax, Nova Scotia, this arrangement being the same at other coast ports.

Coal and Supplies.—There is usually a small quantity of coal in store, and small vessels can go alongside the second wharf inside the point, where there is a least depth of 14 feet, but the ground slopes off very steeply. There is a coal shed on the wharf, capable of holding about 120 tons of coal. Supplies and fresh provisions can be obtained at reasonable rates. It is intended during the present year (1897) to extend the wharf for a farther distance of 15 feet, to allow deep-draft ships to lie alongside.

Anchorage.—There is anchorage about 800 yards southward of Woody Point in from 12 to 20 fathoms water, but the bank, where this depth is available, is narrow and steep, and as the bay is subject to sudden and violent squalls during bad weather, the anchorage can only be considered as temporary.

South Arm.—From Woody Point the shore, with several houses, wharves, and fishing stages, extends in a southerly direction to a low, flat stony spit at the mouth of a small stream. Off this spit the water shoals a little and then deepens toward Hell Cove. On a point at the south side of this cove there is a wharf and warehouses, now out of repair, but formerly used by a local trading company.

There is a good road along this side of South Arm, and the track from Trout River meets it at the northern side of Hell Cove.

Entrance Point, on the opposite side of the arm, is a wooded bluff 280 feet high and with very steep shores. Birchy Head, a birch-covered bluff on the western side, is $1\frac{1}{4}$ miles south of it, the shores on either side, excepting only off a small bight south of the wharf point, being steep-to. The district in the neighborhood of Birchy Head is known as Silverton.

Foul Point is nearly opposite Birchy Head at the foot of the slope from a cliffy summit 1,180 feet high, which rises steeply from the shores. Off it, a little more than 100 yards, there is a small rock with only 6 feet over it at low water, and depths of 3 fathoms between it and the point, and 25 fathoms close-to on the other side. Vessels proceeding up the arm should keep toward the western shore to avoid this rock. The shores round the head of the arm are low and flat, and mud banks occupy the center of the space for fully $\frac{1}{2}$ mile. The outer edges of these banks are very steep, there being 10 fathoms within 30 yards of the low-water dry portion.

Anchorage.—In this locality vessels may anchor in depths of from 20 to 25 fathoms, but the anchorage is not recommended on account of the deep water, the heavy squalls which blow occasionally, and the distance from the settlement.

Deep Water Cove, a small bight $\frac{1}{2}$ mile eastward of Entrance Point, has a few houses on the shores, and the water is not too deep for anchorage, but it is not a desirable berth.

Gadds Head is a low rounded headland $1\frac{1}{4}$ miles from Deep Water Cove. The greater portion of the shore between is rocky and steep-to and backed by wooded hills rising to elevations of from 600 to 800 feet.

From Rattling Brook, a small stream halfway between Gadds Head and Deep Water Cove, the shore is shelving and can not be approached so closely, but the shore around the head itself is steep-to, there being from 14 to 30 fathoms water close to the rocks on its northeastern side.

Anchorage.—Gadds Harbor, the name given to a cove on the eastern side of Gadds Head, has anchorage for small vessels close to the shore.

Water.—Water can be easily procured from Rattling Brook.

East Arm, a deep indentation about $5\frac{1}{2}$ miles in length, on account of its steep shores and great depth of water, is rather a remarkable feature.

The whole of the central part forms a deep basin in which there are depths of from 100 to 126 fathoms, over mud. On either side the shores are quite steep, excepting only at the southwestern corner, where a narrow inlet, named East Arm Barachois, dries at low water, and from which banks of sand and mud extend about $\frac{1}{2}$ mile. On both sides the land rises to a high elevation. On the western side the slopes are densely wooded, but on the eastern some are bare and stony.

Western Shore.—Shag Cliff, the beginning of the western shore of East Arm, is a gray limestone cliff quite steep-to, rising directly from the water to a height of 393 feet. It is surmounted by a clump of dead trees. Immediately eastward is a small bay, with a white stony beach terminating in a low, grass-covered projection, known as Storehouse Point, off which, at a distance of 200 yards, there is a rock with 18 feet water over it and 6 fathoms between it and the shore.

Norris Cove, a small bight one mile south of Storehouse Point, has a few huts behind the beach, and a convenient depth for anchorage, but with very little room.

Tucker Head is remarkable, being formed by a high castellated cliff, 420 feet above the sea. Southward of it is a small bight named Murphys Cove, and here begin the banks of sand and mud already mentioned as extending from the entrance. East Arm Barachois, which is about $1\frac{1}{2}$ miles long, and quite dry at low water, has a small river, in which the salmon fishing is said to be good, flowing into its head from a series of ponds a short distance inland.

Eastern Shore.—The head of the eastern shore of East Arm forms an oval basin, $\frac{1}{2}$ mile long and nearly $\frac{1}{2}$ mile wide, approached through a narrow but deep and clear passage, and affording good sheltered anchorage in from 13 to 18 fathoms water, the best berth being on the western side about 600 yards inside the entrance.

A small river flows into the head of this basin, and from it stony flats extend for nearly $\frac{1}{2}$ mile; but their edges being steep, they do not interfere with the anchorage.

Seal Cove, just outside the basin, has a few huts on the shore, and vessels may anchor off it, but during strong westerly winds the squalls are heavy, and boats are inconvenienced by the short choppy sea set up.

From Seal Cove, northwestward, the shores are very steep-to, and rise in bare stone slopes to a remarkable conical peak, 2,135 feet high, over which there is a rough track to the interior.

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Deer Arm, a branch of East Arm, extending nearly 2 miles in a northerly direction, has at its head a low sandy point, inside which is a small basin dry at low water; a stream, from a large pond under the mountains in the north, runs into this basin.

The highest of these mountains, named Gros Morne, is a remarkable mass of bare rock rising to a height of 2,540 feet, and forming a conspicuous mark from seaward, being the highest land in the vicinity.

The water in Deer Arm is too deep for convenient anchorage, and the locality is subject to violent squalls off the surrounding hills.

Neddy Harbor, at the northern entrance of East Arm, is a deep indentation about $\frac{1}{2}$ mile in length, with an average breadth of 300 yards, but the area, outside the limit of 3 fathoms, available for anchorage, is only 700 yards in length by 400 in width.

There are no dangers in the entrance beyond the shoal water extending about 150 yards from the shores on either side; but off Shoal Point, the next point outside the entrance, on the eastern shore, there is a prong of shoal water extending to nearly 300 yards.

Anchorage.—Vessels of moderate size intending to remain for any length of time will find Neddy Harbor the most convenient, and probably the best anchorage in Bonne Bay, as it is sheltered from all winds except those from SE.; with these winds the squalls are often severe, and a heavy sea is quickly raised. Large vessels should moor, as the space for them is confined.

Position.—A large flat boulder of serpentine rock, marked with a broad arrow and situated on the western shore of the harbor, 100 yards from a small fishing stage with a store on it, is in latitude $49^{\circ} 31' 30''$ N., longitude $57^{\circ} 52' 27''$ W.

Norris Cove, a bight in the shore, just southward of Burnt Point, has a small settlement, which, with Sandy Cove, contains about 175 inhabitants; there is a path from Norris Cove to Roche Harbor.

Norris Point, the western head of this cove, has a ledge of rocks extending from it 100 yards; between it and Gadds Head there is a deep and clear channel named The Tickle, $\frac{1}{2}$ mile wide.

Sandy Head is a conspicuous projection showing a steep, bare, sandy face to the westward. Between it and Norris Point there are several houses and fishing stages, as also in the curve northward of it, where a narrow neck separates the head of Neddy Harbor from the sea.

Wild Cove Head, a dark, rocky, wooded point, separates this (Deckers Cove) from Wild Cove.

Shoal.—Leaving the shore at Wild Cove Head an extensive stony flat fronts the coast to Norris Point, the outer edge of the 3-fathom line being, off Sandy Cove, a little over 600 yards from shore, while at half this distance there is a small patch with 6 feet water over it. Off Sandy Head the stones dry for nearly 200 yards, and off Norris Point, when the edge of the shoal turns sharply in that direction, there is another small patch with only 2 feet over it at low water and $1\frac{1}{2}$ fathoms between it and the shore.

Directions.—Entering Neddy Harbor, the shoal off Norris Point may be avoided by bringing the extremes of Shag Cliff and Gadds Head in line, bearing N. 83° E. (S. 68° E. mag.), before the Roman Catholic church at Woody Point is over Roberts Wharf, No. 4. Gadds Head may be passed at any convenient distance, and Neddy Harbor entered between the points.

Wild Cove, a deep bight on the north side of Wild Cove Head, has a moderate depth of water, but the bottom being stony, and the cove exposed to westerly wind and sea, it is not suitable for anchorage.

Salmon Point, a narrow bare point, composed of slate, is $3\frac{1}{4}$ miles from Wild Cove Head, the shore between being composed of cliffs, of the same formation, backed by thickly-wooded hills and generally fronted by a narrow rocky fore shore. The shore is fairly steep-to, except close to Salmon Point, where the low water ledges and foul ground extend for nearly 200 yards.

Ice.—Bonne Bay is completely closed with ice about 2 feet in thickness from January to April, but never freezes until the field ice appears, which is generally about the middle of January, disappearing about the middle of April. The first vessel usually arrives early in May, the last leaving about the end of December. May 30, 1875, coast clearing; May 24, 1882, ice on the coast; June 8, 1883, coast blocked.

Tides.—It is high water, full and change, in Norris Cove at 10h. 40m.; springs rise 6 feet, neaps rise $4\frac{1}{2}$ feet. There is considerable diurnal inequality in the height of the tides, consecutive high and low waters differing, about the time of springs, as much as 2 feet.

Tidal Streams.—The tidal streams run generally fair in and out of the East Arm through The Tickle, where, during springs, they are very strong. In the South Arm the direction, during the ebb tide, is not so regular, apparently owing to the outgoing stream being met, and checked, by the flow through The Tickle.

Bank.—Fronting the northern side of the entrance to Bonne Bay is an extensive rocky bank, with general depths of from 12 to 17 fathoms, the 20-fathom limit terminating 10 miles NW. of Western Head, and here the bank is about $1\frac{1}{2}$ miles wide. The bank extends in a southwesterly direction from Martin Point, and has some small

patches of 8 and 9 fathoms lying 6 miles NNW. of Green Point, the 10-fathom contour terminating $3\frac{1}{2}$ miles west of Gun Point. Fish are usually plentiful on this bank, and during fine weather numerous boats, from the neighboring coast, may here be seen at anchor.

Roche (Rocky) Harbor, formed by a deep indentation in the coast line north of Salmon Point, is about one mile deep and $\frac{1}{2}$ mile wide; it affords good anchorage, except during strong winds from the westward, when a heavy sea is thrown in.

From Salmon Point and the next point inside it, where there are a few houses and fishing stages, a flat ledge covered with stones and bowlders extends 650 yards northwestward. The ground is foul for nearly 200 yards on either side of this reef, and rocky ledges fringe the shore nearly all round the harbor, foul ground extending from them for about 300 yards.

At the head of the harbor, known as the Bottom, there is a small break in these ledges, here there are a few houses and good landing for boats; this is also the case on the northern side of the harbor, in a bay known as Bear Cove.

The whole population of this locality numbers about 160 persons, all engaged in the fisheries. There is some cultivated ground on the southern side, inside Salmon Point, and potatoes and other vegetables are grown.

Anchorage.—The best anchorage is in 6 or 7 fathoms water off the southern shore of the harbor, with the extreme of the northern head bearing N. 56° W. (N. 27° W. mag.), and the extreme of Salmon Point in line with the extreme of the next point inside it, S. 34° W. (S. 63° W. mag.).

Directions.—The northern summit of Gros Morne in line with a saddle-shaped wooded hill behind the shore, bearing N. 87° E. (S. 64° E. mag.), leads up to the entrance of Roche Harbor and well clear of the foul ground extending from Salmon Point. When abreast Woody Cove, the first bight on the northern shore, a vessel should haul to the SE. for the anchorage, care being taken to avoid a rocky projection from the inner point of Woody Cove, on the one side, and the foul ground extending from the Bowlder Ledge, on the other.

(B. A. Chart No. 2834.)

General Remarks.—**Bonne Bay to Cow Head.**—In this locality there are no harbors, nor even anchorages, except only at Cow Cove, where shelter will be found during NE. to NW. winds. The bottom off the whole coast is of rocks and bowlders, with here and there very small patches of sand, and it is only during the finest weather that a vessel may anchor off any part of it.

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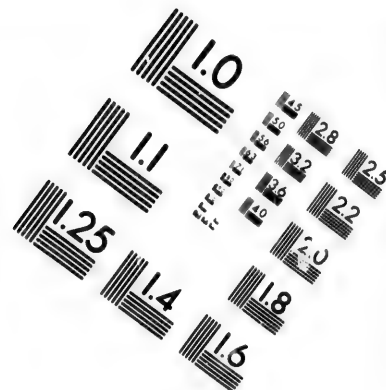
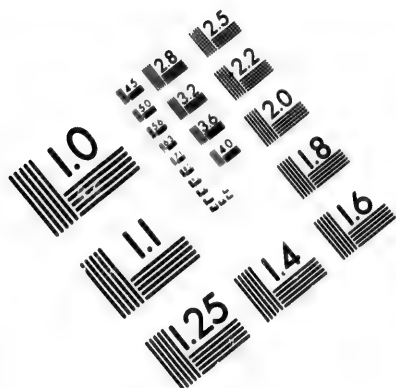
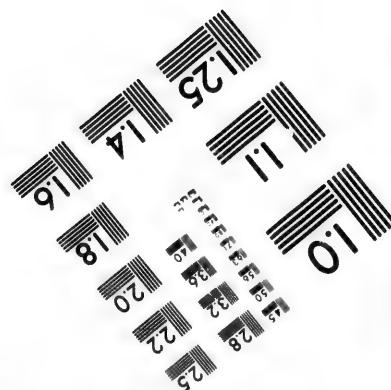
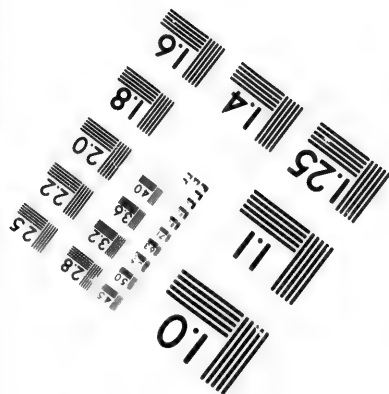
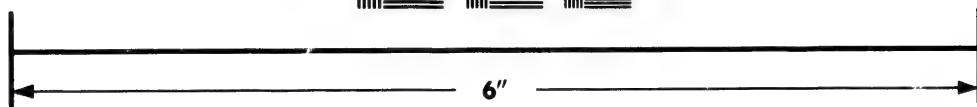
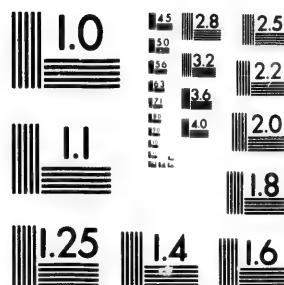


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During the summer of 1896 the prevailing winds were from the western quarter; southwesterly in June, July, and August, and northwesterly in the autumn, but occasionally interrupted by short intervals of easterly weather. Northwest winds, blowing with strength, throw a heavy sea on this shore, as also do those from the NE., and during these periods landing with safety is almost impossible, except in a few places where there is a little indifferent shelter. The large quantity of driftwood and wreckage along the whole coast between Bonne Bay and Port Saunders is suggestive evidence of the violence with which this sea rolls onto the shore.

Easterly gales are not frequent, but are generally accompanied by thick rainy weather.

Current.—Inshore, between Bonne Bay and Cow Head, there is generally a current running to the NE.; maximum rate, about $1\frac{1}{2}$ miles an hour.

Lobster Cove Head, a projection of the shore immediately north of Roche Harbor, is composed of low red cliffs, 32 to 35 feet high, and fronted by flat ledges of rock extending 150 yards. Near the western extreme of these ledges there are two large rocks, the tops of which are 12 feet above high water.

Light.—From a cylindrical iron tower, painted white, on Lobster Cove Head, is shown a flashing white light, showing 2 flashes every 5 seconds. The light is elevated 115 feet and should be visible 16 miles.

Lobster Cove is a small bight northward of Lobster Cove Head; in it there are a few houses and a canning factory, off which there is a long stage or jetty for landing, but this can only be effected during fine weather or with offshore winds.

Rock.—A small rock, with 13 feet water over it, lies about 400 yards NNW. from the southernmost head of Lobster Cove. Between this rock and the northern head of Lobster Cove there are depths of $3\frac{1}{2}$ to 4 fathoms.

Berry Head is the name given to a slight projection of the low shore $1\frac{1}{2}$ miles from Lobster Cove, and one mile from the head is Bakers Brook, a small stream with a rough bridge across its mouth. Between this brook and Green Point there are two large ponds directly behind the beach.

Berry Hill is a small wooded knoll, $\frac{1}{4}$ mile behind the shore, about halfway between Berry Head and Lobster Cove.

Green Point, formed by the projection of a low clay cliff, flat-topped and grass-covered, lies $4\frac{1}{2}$ miles northward from Lobster Cove, and is easily recognized by its formation, and also by the houses in the bay, directly to the southward. Between this point and Lobster Cove the land is low and wooded, and fronted by a rough stony beach, off which the water is shallow for about 200 yards.

Green Cove, on the south side of Green Point, is shallow for about 400 yards from the shore, and quite unfit for anchorage, as there is generally a swell setting in from seaward when the wind is from that direction, while with strong winds offshore the squalls from the mountains are violent.

A ledge of rocks extends in a southwesterly direction from Green Point, and 600 yards from the foot of the low cliff there is a detached patch, with 3 fathoms water over it, and a narrow boat passage, having slightly more water, inside. At $\frac{1}{4}$ mile outside this, and nearly 1,200 yards from the point, there is another detached rock, with a depth of $4\frac{1}{2}$ fathoms over it and 5 to 8 fathoms around. These rocks break heavily with an onshore swell.

(B. A. Chart No. 2064.)

Gun Point is formed by a slight angle in the shore line $2\frac{1}{10}$ miles from Green Point; between them the shore is composed of bowlders, with a low bank, more or less wooded, rising behind the beach. A small stream, named Little Brook, with a canning factory on its northern side, is situated one mile from Green Point. Behind these are low ridges with extensive marshes and many ponds.

Gun Point Shoals comprise a group of rocky heads on a narrow ridge extending from the shore a little north of Gun Point, the shoalest spot, with a depth of 3 fathoms, lying 1,400 yards N. 41° W. (N. 11° W. mag.) from the point. Round this there are depths of from 4 to 5 fathoms, the latter depth extending in a westerly direction for 400 yards farther. Westward of the ridge the line of 10 fathoms extends for $3\frac{1}{4}$ miles from the land.

Clearing Mark.—Crag Peak, a remarkable conical summit, over the southern side of the entrance to Bonne Bay, just open of Green Point, bearing S. 2° E. (S. 28° W. mag.), clears the Gun Point Shoals.

Coast.—From Gun Point northward the coast is of much the same character as that toward Green Point, but the shoal water fronting the beach here extends a little farther off. About 1,200 yards from Gun Point there is a shallow cove known as Sally Cove, where there is a canning factory and a few houses, and on either side of this bight a tongue of stones and bowlders, dry at low water, extends about 300 yards from the beach; here the 3-fathom line is over 800 yards from the shore.

Communication.—The coasting steamer from Halifax sometimes stops off Sally Cove when making her monthly trips to and from the northern ports.

Martin Point, $2\frac{8}{10}$ miles from Gun Point, is easily recognized, it being a low cliff, 35 feet high, grassed on the top and having close behind it a large clump of trees. Northward of the point

the shore line turns sharply to the eastward and again to the NE., forming a small bight, in which there is a solitary cottage. Some rocks, dry at low water, extend 200 yards from the point, but these are steep-to.

Shoals.—About halfway between Gun and Martin Points, and $1\frac{1}{2}$ miles from the beach, there is a patch locally known as Dixie Rock, but more generally known as Indrie Rock. This danger, which is of small extent, lies $1\frac{1}{2}$ miles S. 57° W. (S. 87° W. mag.) from Martin Point, and has 2 fathoms over it at low water, and from the 5-fathom line extends about 300 yards to the NNE. and SSW., respectively. Between Indrie Rock and the shore, rather more than $\frac{1}{2}$ mile from the latter, there are some rocky shoals of 4 and $4\frac{1}{2}$ fathoms.

The Whaleback is a narrow ridge of rocks lying in a NE. by E. and SW. by W. direction, at nearly one mile off Martin Point. Near the middle of this ridge, and one mile N. 71° W. (N. 41° W. mag.) from Martin Point, there is a small mushroom-shaped rock which dries 4 feet at low water, and from it the 5-fathom line extends 800 yards SSW. and 1,200 yards NE. by N. Over this area there are several spots of $1\frac{1}{2}$ to 2 fathoms. Both sides of the ridge are quite steep-to, but more especially that facing seaward, where the 20-fathom line is but little over 200 yards off. In thick weather, therefore, the lead is not to be depended on when standing toward the shoal.

Between this ridge and Indrie Rock there is a clear passage toward Martin Point, carrying 5 and 6 fathoms.

Northeast of Whaleback Rock, at a distance of $1\frac{1}{2}$ miles, there begins another cluster of shoals, known as the Brandies, the southwestern head of which, with 2 fathoms water over it, lies $1\frac{1}{2}$ miles N. 9° E. (N. 39° E. mag.) from Martin Point and $1\frac{1}{2}$ miles from the nearest shore. Eastward from this head is another, with a depth of 15 feet, and 800 yards farther NE. there is a third cluster of rocks, the top of which is awash at low water. All these shoals are, like the Whaleback Ridge, steep-to on the seaward sides and break heavily with a swell from that direction. There is a good clear passage between these shoals and the shore, but its northern end is, within the 5-fathom line, contracted to a width of 650 yards by a bank extending off the beach. As, however, the shoalest part of the Brandies is generally visible by the break, or wash, over it, the navigation of this passage presents no difficulty.

Clearing Marks.—Crag Peak, over the southern side of the entrance to Bonne Bay, open of Green Point, bearing S. 2° E. (S. 28° W. mag.), clears Indrie Rock and leads $1\frac{1}{2}$ miles outside the Whaleback.

Parsons Pond Hill, a conspicuous, wooded, double-topped hill near Parsons Pond, open eastward of Cow Head Peninsula, bearing N. 36° E. (N. 66° E. mag.), leads outside the Whaleback and the Brandies.

Mountain Range.—From the northern side of the east arm of Bonne Bay a conspicuous range of mountains extends in a northerly direction. Gros Morne (2,540 feet), the highest of these, near Bonne Bay, is easily recognized from seaward by its elevation, and also from the southward by its bare sloping southern face, while from the NW. its steep cliffs, falling into a deep gorge, with perpendicular sides, are conspicuous.

From this mountain the range extends nearly parallel to the coast, its westernmost ridge being about 5 miles distant. From it low wooded spurs reach off toward the shore, and north of Green Point terminate in large tracts of bog and barren, with numerous ponds.

About 3½ miles from Martin Point, in an ESE. direction, there is a conspicuous wedge-shaped summit, 1,815 feet in height, which forms the southwestern angle of a very remarkable gorge, the sides of which appear as immense perpendicular walls of rock. Occupying this gorge, and stretching beyond the before-mentioned summit, through the flats, and to within 1¼ miles of the shore, there is a large sheet of water, known as Western Brook Pond, said to extend 10 or 12 miles inland.

Sailing vessels passing along this part of the coast during strong easterly winds should be careful to guard against damage from the violent squalls that blow down from the gorges of this mountain range.

Coast.—From Martin Point the coast continues 1¼ miles to Gulls Marsh, where there is a canning factory on the beach. From this place there is a trail through the marshes to the end of Western Brook Pond, where the residents of the factory keep a small boat for hunting purposes.

Three miles from Gulls Marsh a sandy beach takes the place of the stones hitherto met with, and a small stream named Western Brook, flowing from the large pond already noticed, runs some little way behind it and falls into the sea. North of this the coast becomes rocky, and, with a small bight, forms the projection known as Broom Point, on which there are a few cottages. Two ridges of dry rocks extend about ¼ mile seaward from the point, and in the bight between them there is a landing stage and fish store. The ends of these rocks are steep-to, and may be passed at a short distance; but off the mouth of Western Brook the 3-fathom line extends upward of 600 yards from shore. To this distance, and often beyond it, the water is frequently discolored by the discharge from the brook.

St. Pauls Bay, lying north of Broom Point, is about $2\frac{1}{2}$ miles wide and one mile deep, but quite exposed to any wind or swell from seaward. The shores are low and stony, the bottom is foul, and the anchorage indifferent; even with the strong sea breeze that frequently blows, it is unsafe.

There are some rocky patches in the bay, one with 5 fathoms water over it, lying one mile in a northwesterly direction from Broom Point, and one with a depth of $2\frac{1}{2}$ fathoms, 600 yards off-shore, a little southward of the entrance of St. Pauls Inlet. Abreast of the center of the bay, and nearly 2 miles from Broom Point, there is a small patch of 6 fathoms.

On the north side of the bay a break in the low shore gives access to a narrow channel, between some extensive stony banks that dry at low water, leading into St. Pauls Inlet. This break is 1,200 yards wide, and inside it the shore opens out, forming an oval basin about $1\frac{1}{2}$ miles long by one mile wide, filled with banks of sand and stones which dry at low water. It is surrounded by low marshy shores, and has two channels leading from the sea. The northern of these is very shallow, and terminates near a low stony islet, but the southern is deeper, and, carrying from one to 3 fathoms, it leads up to a narrow passage between two points $1\frac{1}{2}$ miles from the entrance. The southern side of the mouth of this channel is formed by a sandy spit on which there are some houses, and which may be recognized from seaward by the wooded hill, 220 feet high, a little to the southward, and also by a large wooden building situated near the extreme of the point and used as a canning factory.

From the end of this point a ridge of shingle extends NW. and forms a narrow bar across the entrance of the channel; over it there is not more than 3 feet at low water, but immediately inside the depth increases to $1\frac{1}{2}$ and 2 fathoms, while under the factory the shore is quite steep-to.

The bar is easily crossed by boats during fine weather by keeping close along the northern side of the spit projecting from the factory point, but it is dangerous during strong winds with a heavy swell.

St. Pauls Inlet.—Passing the factory, the channel already noticed is about 65 yards wide, with a low-water depth of one to $1\frac{1}{2}$ fathoms. The edges are clearly defined except at high water, and there is no difficulty for boats beyond that caused by the tidal streams, which run through the channel and over the bar with considerable strength.

At $1\frac{1}{2}$ miles from the sea the shores of the estuary are contracted to a channel, about 50 yards wide, by two slightly elevated points extending from either side; the depth here increases to 4, 5, and 7 fathoms, and immediately beyond is the extensive sheet of water

known as St. Pauls Inlet. From the narrow entrance to the head this area is nearly 6 miles in length, with a breadth ranging from 3 miles inside the entrance to $\frac{1}{2}$ mile at its head.

The eastern end of the inlet, as also the southern side, lies at the foot of the seaward face of a portion of the mountain range extending northward from Bonne Bay, and toward them the water is deep and clear of shoals; but inside The Tickle, or entrance, the water is shallow and there are several rocky patches. A channel carrying about 2 fathoms, and leading into the deeper water, may, however, be found by keeping along the western shore. On this side, about one mile from The Tickle, borings for oil have been some time in progress, and it is now (1897) reported that a good supply has been obtained at a depth of 1,000 feet.

Coast.—The coast from St. Pauls Bay to Cow Head, a distance of $2\frac{1}{2}$ miles, comprises a rough stony beach in front of a low wooded bank, behind which are ponds and marshy ground reaching to the hills, which here begin to recede further from the shore, and, being broken by steep gorges with immense cliffs on either side, present seaward a very rugged and barren aspect.

Cow Head, a conspicuous peninsula one mile in length by $\frac{1}{2}$ mile in breadth, and densely wooded on its southern and western sides, rises to a height of 206 feet. A low isthmus of sand and stones joins it to the main shore, separating Cow Cove, on the southern, from Cow Head Harbor, on the northern side. The northern slope of the head has been partially cleared and affords grazing to the sheep and cattle of the residents, whose houses are situated at the NE. side. Here there is a large canning factory and some landing stages, the latter getting some partial protection from a ridge of dry rocks extending from the northernmost point. The seaward side of the head is steep-to, but there are a few rocks extending from the SW. point.

Cow Cove affords good anchorage, in from 4 to 10 fathoms water, during NE. gales, that are prevalent in the early spring and autumn months; also with moderate breezes as far round as N. by W., but with winds to the westward of this a heavy swell rolls in, rendering the anchorage unsafe.

Cow Head Harbor.—North of Cow Head Peninsula the coast takes a sharp bend, forming the isthmus, before referred to, and then continues to the northward, in a long curve of sandy shore, to Downes Point, a distance of a little over 2 miles. Off Downes Point, 600 yards, White Rock Islets, a chain of small islets and low-water rocks, $1\frac{1}{2}$ miles in length, together with the shores, just noticed, form Cow Head Harbor.

The islets are connected with Downes Point by a sandy flat drying at low water, which, extending to the southward, occupies a

considerable portion of the partially inclosed space, which is, at best, only suitable for vessels of moderate length and drawing less than 10 feet water; for not only is the passage into it narrow and tortuous, but during northeasterly or northwesterly winds such a heavy swell rolls in that there is great risk of touching the ground.

The entrance is obstructed by Tortoise Rock, awash at low water, and separated from the rocks extending from Cow Head by a channel about 100 yards wide. In the middle of this, and slightly inside Tortoise Rock, there is, however, another rock, with only 6 feet water over it, and a very narrow passage of 12 to 15 feet on its northern side. North of Tortoise Rock it would be difficult to find a passage with more than 10 feet at low water, and in any case local knowledge is necessary to enter safely. Inside, anchorage may be found in $2\frac{1}{2}$ to $3\frac{1}{2}$ fathoms water, but in bad westerly weather there is not much shelter.

Communication.—The monthly coasting steamer from Halifax calls off Cow Head Harbor on her way to and from the more northern ports.

Tides.—It is high water, full and change, at Cow Head Harbor at 10h. 30m.; springs rise $6\frac{1}{2}$ feet, neaps rise $4\frac{1}{2}$ feet.

Tidal Streams.—Between Cow Head Harbor and Stearing Island the tidal streams run strongly, the flood to the NE. sometimes attaining a velocity, at springs, of 2 knots an hour. The duration of this stream is much longer than of that in the opposite direction; and along the shore, between Cow Head and Bonne Bay, as also to the northward, there is generally a stream running to the NE.

Stearing Island, lying $\frac{1}{2}$ mile NW. of Cow Head, is 22 feet high, $\frac{1}{4}$ mile in length, with an average breadth of about 100 yards; but from either end broken islets and low-water rocks extend 600 yards westward and 350 yards northeastward. The island is composed of limestone rock, with a scant covering of coarse grass. Its southeastern side is fairly steep-to, but to the westward and northward shoals extend upward of 600 yards, making it a dangerous obstacle to navigation at night or in the thick weather which is occasionally prevalent. Vessels passing this locality under these conditions will do well to keep outside the line of 20 fathoms, which will insure their being at least $\frac{1}{2}$ mile westward of the island shoals.

Shallow Bay.—From Downes Point, already mentioned, the coast forms another long sandy curve, backed up by wooded flats and marshes, similar to that in Cow Head Harbor, but broken by two small streams and terminating in a rocky projection named Lower Head. This curve, together with the northern half of the

White Rock Islets, forms Shallow Bay, where there is fairly good anchorage for vessels of less than 14 feet draft, with winds to the southward of WSW. Those drawing less than 12 feet may find shelter, with the wind as far round as west, by going as close as possible to the White Rock Islets, but with this wind a heavy sea is likely to roll in and, at low water, to break over the greater part of the bay.

Anchorage.—If desiring to anchor here, a vessel from the southward should pass along the western side of the White Rock Islets, which are fairly steep-to, and haul round their northern extreme, giving the rocks a berth of about 100 yards. The best anchorage is with the whole of Stearing Island, and rocks, just open northward of the northernmost grassy islet of the White Rock Group, bearing about S. 77° W. (N. 73° W. mag.), and the canning factory at Cow Head Harbor, a conspicuous whitewashed building on the shore, just seen open of the other islets of the same group. This berth will be in 3½ fathoms water, but quite close to the edge of the 3-fathom bank extending from the islets and Downes Point. A little eastward of this position a 3-fathom bank extends from the main shore, leaving a bight of deeper water, 3½ to 4½ fathoms, between it and Downes Point. It is in this bight that anchorage should be sought. Entering Shallow Bay from the northward, a vessel should pass the shoal water off Lower Head in 8 or 9 fathoms, and then steer for the northern end of the White Rock Islets before hauling into the anchorage.

Evangeline Banks comprise a series of rocky patches extending from abreast the northern extreme of the White Rock Islets, in a northerly direction, for ¼ mile.

The least water on these shoals, 2 fathoms, lies 900 yards N. 41° W. (N. 11° W. mag.) from the northernmost grassy island of the White Rock Group, and is on a patch about ¼ mile long by 200 yards wide. At 300 yards north of this there is another patch, of 2½ fathoms, with 3½ fathoms between. Farther north the depths on the bank are 3½ to 5 fathoms, reaching toward the shoals off Lower Head.

Inside this bank there is a belt of deeper water, 5 and 6 fathoms, fronting the shoaler area in Shallow Bay.

(H. O. Chart No. 1105 and B. A. Chart No. 284.)

Coast.—Lower Head is conspicuous from its being the termination of the sandy shore extending northward from Cow Head. It is a rocky projection, 35 feet in height, and from it a low cliffy shore, with a small sandy bight, extends ½ mile northward. Off Lower Head, and also off this cliffy shore, the shoal water extends for nearly ½ mile, and is clearly marked by breakers, when there is

any swell. This shoal should be carefully avoided if entering or leaving Shallow Bay in that direction.

From the cliffs the shore is low and thickly wooded, for $3\frac{1}{4}$ miles rising gradually to the slopes of Parsons Pond Hill, a conspicuous feature, 460 feet in height, and densely wooded to the summit. The rough beach, of stones and bowlders, is fronted by flat ledges of rock extending about 200 yards from the shore; outside these the water deepens gradually to 10 fathoms, $\frac{1}{4}$ mile distant.

About 4 miles from Lower Head the rocky ledges cease and the stony beach becomes less rough, and finally changes to sand; behind these is a steep, yellow-colored clay bank, which is conspicuous from seaward. Behind this bank there is a large pond and low, marshy ground.

Sandy Bay, 5 miles from Lower Head, is only a shallow bend in the shore line, but has near its southern end the entrance to a large sheet of water, known as Parsons Pond.

The bay is generally foul and rocky, and does not afford more than temporary anchorage for the purpose of communicating with the village, situated just inside the entrance alluded to.

Parsons Pond is a large sheet of water extending inland from Sandy Bay for about 7 miles, with an average breadth inside the narrows near the entrance of about one mile. The entrance is obstructed by a bar of coarse shingle, with a depth of 4 feet over it at low water, and immediately inside it, on the southern bank, is the village, with some buildings on the sandy spit opposite. Here the depth in the passage is about one fathom, but farther in it quickly shoals again to 3 and 4 feet, through a stony flat. One mile and a half from the sea the channel is contracted to little over 200 yards, but here the depth is from one to 2 fathoms. Above this the pond opens out for about $1\frac{1}{4}$ miles, where there is another narrow passage, beyond which the water deepens to 5 and 8 fathoms. This depth continues to the head, which lies directly at the foot of the mountain range.

Borings for oil are being prosecuted on the southern shore of Parsons Pond, $5\frac{1}{4}$ miles from the entrance.

Coast.—From Parsons Pond northward there is a low stony beach for $\frac{1}{4}$ mile, followed by a clay bank, not unlike that on the other side of Sandy Bay. From here a rough beach of stones and bowlders, fronted in places by rocky ledges, extends to the Arches, a remarkable cluster of detached masses of sandstone honeycombed by the sea, and standing on a sandy beach a little above low water.

The country behind this part of the coast comprises low ridges, thickly wooded, and large tracts of marsh extending toward the mountains some 6 miles inland. The shore is fairly steep, the 10-fathom line being generally about $\frac{1}{4}$ mile off, while a little north

of Sandy Bay the line of 50 fathoms closes in to a distance of 4 miles from land.

Two miles north of The Arches the coast bends a little to the eastward, and rather more than $\frac{1}{2}$ mile from it Portland Hill rises to a height of 530 feet. It is a remarkable hill, thickly wooded, and wedge-shaped when seen from the southward. Its seaward end forms a perpendicular cliff, which extends a little along the southwestern side and on the northern face, gradually changing to a steep slope, which finally joins with the ridges farther inland. This hill is a conspicuous landmark when approaching the coast.

Portland Cove.—Abreast of Portland Hill flat ledges again appear outside the stony beach and continue for a distance of 2 miles. Here there are some cottages and a canning factory. The shore, now changed to a sandy beach, gradually turns to the westward, forming a small bight named Portland Cove. At its head there is a creek, or channel, running from a large sheet of water one mile back and having in it a depth of from 2 to 3 feet, but owing to its being much obstructed by large stones and boulders, it is difficult for a boat to get through, though the entrance is easy of access in fine weather.

Off the creek the water in the cove is shallow for about $\frac{1}{2}$ mile, but outside this fairly good anchorage will be found during winds from north, round by east, to south, the depth being about 4 fathoms, over a bottom of sand and mud.

There are no dangers outside the line of 3 fathoms, which, however, extends for nearly 600 yards from shore. A little more than 200 yards off the factory there is a ledge, which dries at low water, with less than a fathom between it and the rocks.

Coast.—Eastern Head, the outer point of Portland Cove, is 30 feet high, bare on the top, and with a rocky shore. Northward for $1\frac{1}{2}$ miles the coast is of similar character, and here there is a white stony beach in front of a high green bank; north of this beach there is a rocky point, named Clifty Point, behind which the bank attains an elevation of 60 feet.

A small rocky ridge, Brown Shoal, with 4 fathoms water over it and 10 fathoms inside, lies 1,800 yards from Clifty Point in a southwesterly direction and $\frac{1}{2}$ mile offshore. From Clifty Point the stony shore continues in a NNE. direction, backed by a more or less wooded bank for 2 miles to a low point fronted by some rocks, two of which are pinnacles 25 feet high. There are several houses on the point, and the rocks in front, extending a little to the northward, form a cove known as Daniels Harbor. Reaching nearest to the coast, a little north of Clifty Point, a large pond occupies the greater part of the space between this locality and the mountain range 7 miles back.

This pond, of an irregular ovate form, is nearly 5 miles in length by $2\frac{1}{2}$ in width, and has an outlet into Portland Cove, already noticed. At its upper end a small channel, quite accessible to boats, leads into another pond, which occupies a mountain gorge extending to the eastward.

In the outer pond the water is not very deep, from 3 to 6 or 7 fathoms, but in the inner one a sounding of 95 fathoms was obtained by the triangulating party engaged in the survey.

The residents of Daniels Cove keep several boats on the larger pond, in which they make hunting excursions to the mountains.

On the north side of the inner pond a truncated mountain, 1,650 feet in height, and with nearly perpendicular sides, is conspicuous. Northeast from it the range continues for about 4 miles, and terminates a little beyond a summit, 2,115 feet high, locally known as Eastern Hill.

Caution.—Between Daniels Cove and Port Saunders the prominent points are reported to be out in bearing in relation to each other; caution is therefore necessary when approaching the coast.

Table Point, 11 miles from Portland Cove, is a low, rocky, sharp cliff, the north extreme of a series of small beaches; from it the shore is bordered by shingle in front of woods.

Bad Bay, $11\frac{1}{2}$ miles from Table Point, and completely open to seaward, has at its head a yellow-colored cliff, south of which Ponds River discharges, which is ascended by small boats with difficulty against the stream, which is strongest in spring. Little Brook discharges north of the yellow cliff.

Anchorage.—Temporary anchorage may be obtained $\frac{1}{2}$ mile off the yellow cliff in from 8 to 10 fathoms water.

Coast.—The coast from Bad Bay is again wooded, and rises gradually, and a conspicuous yellow patch is situated $1\frac{1}{2}$ miles northeast of Burntwood Point and just south of Eboulement Point, off which latter rocks and shoals extend NNW. a little more than $\frac{1}{2}$ mile.

(H. O. Chart No. 1175.)

Ingornachois Bay, lying between Eboulement and Rich Points, nearly 6 miles distant from each other, is $3\frac{1}{2}$ miles deep and completely exposed, but with offshore winds temporary anchorage may be obtained north of Port Saunders in 10 fathoms water, or in the spacious arms at the head.

Rocks.—A rocky patch, with a least depth of 2 fathoms on it, lies with Eboulement (locally known as Spirit) Point 700 yards S. 62° E. (S. 30° E. mag.).

A rock, with a depth of 22 feet on it, lies with Eboulement Point 1,100 yards S. 44° E. (S. 12° E. mag.).

A rock, with a depth of 16 feet on it, lies with Eboulement Point 1,300 yards S. 29° W. (S. 61° W. mag.).

The shoal on which this rock is situated, extending about a mile northeastward from Eboulement Point, has general depths of 3 to 4 fathoms on it.

The southern part of Two Hills Point open northward of Keppel Island leads northward of these dangers.

A rock, with a depth of 22 feet on it, lies with Keppel Island Cross 1,200 yards S. 37° E. (S. 5° E. mag.).

A rock, with a depth of 27 feet on it, lies with Keppel Island Cross 1,600 yards S. 12° E. (S. 20° W. mag.).

Keppel Island, at the head of the bay, lies off the entrances to Hawke and Keppel Harbors and Port Saunders. It is not easy to distinguish, the outer part being a blackish cliff, on which is a large cross which is falling into decay. The island is a mile long and continued to the eastward by Morue Spit, a shingle spit that covers at high water and is steep-to. The other shores of the island are bold. Trapper Cove, a shallow bight, lies just west of the entrance to Hawke Harbor.

Hawke Harbor is entered between Keppel Island and a low wooded point to the southward.

A dangerous sand bank extends from the south shore nearly 800 yards, narrowing the entrance to 600 yards between it and the peninsula that forms Keppel Harbor.

Directions.—To enter Hawke Harbor pass about 200 yards from the SW. side of Keppel Island, steering about S. 78° E. (S. 46° E. mag.) till Grass Point bears North (N. 32° E. mag.), then steer S. 49° E. (S. 17° E. mag.) for the center of Robinson Island, taking care to avoid the shoal off Keppel Point, and anchor $\frac{1}{2}$ mile southward of that point in 15 fathoms water, over mud, or $\frac{1}{4}$ mile NW. of Robinson Island in 16 fathoms.

Keppel Point, the north extreme of this peninsula, is continued by foul ground for 400 yards nearly on its north and west sides. Robinson Island, off Lossieux Point, the south extreme of this peninsula, is joined to it by shoal water. Shoals extend east nearly 400 yards, and west about 100 yards.

Hawke Bay extends nearly $4\frac{1}{2}$ miles E. by N. from Robinson Island, and is $1\frac{1}{2}$ miles in mean breadth. The south shore curves east of Robinson Island to Ourson Point, off which shoals lie nearly 600 yards. The south coast of the bay is foul, the north shore is clear, except Cook Bank, and there is a salmon fishery at the head, from which shallow water extends $\frac{1}{2}$ mile.

Anchorage may be had anywhere in the bay in 7 to 18 fathoms, mud, taking care to avoid the following dangers:

Cook Bank, with 16 feet, lies N. 62° E. (S. 86° E. mag.) a little more than 1½ miles from Robinson Island, leaving a passage between it and the north shore 300 yards wide.

Commander Shoal, with 9 feet water, lies nearly halfway up the bay, on the south side, off a cove with a rocky point in the middle, and extends nearly a third of the distance across the bay. Cible Point, SE. of this shoal, will be easily recognized, being the only cliff in the bay, the other portions of which are low, and faced by shingle, sand, or flat rocks. Cible Shoal extends 300 yards from this point.

Gull Shoal, with 5 feet water, lies close off the point next east of Cible Point, and is steep-to on the north shore.

Water is most conveniently obtained from the stream between Cible and Gull Points; at the head of the bay good salmon and trout fishing may be obtained, in the season, and deer shot in the vicinity.

Ice.—Hawke Bay freezes late in November or early in December, and breaks up between 20th April and 10th May.

Tides.—It is high water, full and change, at Hawke Bay at 11h.; springs rise 6 feet, neaps rise 4 feet. At the east part of the bay the tidal stream is strong enough to keep vessels riding athwart a good breeze, and the streams are strong in Hawke Harbor.

With a flood tide, the stream from the torrent sets across the bay, and would carry a vessel toward the north shore.

Directions.—Large vessels should steer SW. of Robinson Island, and may approach it as close as 140 yards, but it is better to keep mid-channel. After passing the island steer for Great Point, the east extreme of the north shore of the bay, on which there is a remarkable flat rock, and when past Ourson Point anchor as convenient.

Keppel Harbor, just north of Keppel Point, is one mile long and nearly ¼ mile wide, but shoal water extends ½ mile from the head.

Anchorage.—By following along the south shore of Keppel Island the harbor will open, and, by keeping in mid-channel, anchorage may be obtained, in 6 fathoms water, about ½ mile within Keppel Point; another anchorage much frequented by fishermen is between Saunders Point and Morue Spit, in 11 fathoms water, over mud or sand.

Port Saunders, entered north of Keppel Island, between Saunders Point on the south and Two Hills Point (a wooded hill with a double summit) on the north side, is 400 yards wide at the entrance, from which the harbor extends 2½ miles, with a mean breadth of ¼ mile. (See Caution, page 279.)

A little within the entrance on the north shore is a steep bank of shingle.

Supplies.—Fresh provisions can be obtained at Port Saunders.

Montaignac Rock, which uncovers at low water, is situated one mile from the entrance and one-third of the distance across from the south shore. The cross on Keppel Island, kept open north of Saunders Point, bearing S. 72° W. (N. 76° W. mag.), leads north of this rock.

Kent Point is on the northern side of Port Saunders; Dunlop Spit, with 3 feet water near its extremity, extends 400 yards south from this point.

Directions.—Anchorage may be obtained inside the entrances between it and Montaignac Rock, in from 7 to 14 fathoms water, but if proceeding to the head of the bay, the mark for clearing Montaignac Rock must be kept on till within 400 yards of Kent Point. A course of S. 56° E. (S. 24° E. mag.) will lead between Montaignac Rock and Dunlop Spit, and when Two Hills Point is in line with the south shore, bearing about S. 88° W. (N. 60° W. mag.), Dunlop Spit will be cleared, and anchorage may be taken up, in 6 or 7 fathoms water, just south of that mark. Off nearly all the shore of Port Saunders bowlders, that dry at low water, extend from 40 to 60 yards from the beach, and make the landing bad at low water.

Ice.—Port Saunders freezes late in November or early in December, and breaks up between 20th April and 10th May.

Tides.—It is high water, full and change, in Port Saunders at 10h. 45m.; springs rise 6 feet.

Gargamelle Cove, 2 miles east of Rich Point, is only adapted for boats; at the head of the cove the isthmus, 300 yards broad, that separates it from Old Port au Choix, joins Rich Point Peninsula to the main.

Rich Point, the north limit of Ingornachoix Bay, is the SW. extreme of Rich Point Peninsula.

Light.—On Rich Point an octagonal tower, 58 feet in height, painted white, with a red lantern, exhibits, at an elevation of 93 feet, a revolving white light every 45 seconds, the light attaining its greatest brilliancy at intervals of 15 and 30 seconds and being obscured during the greater part of the longer interval. It should be visible 15 miles. The keeper's dwelling near it is painted white.

Rich Point Shoal, with 9 feet water over it, lies 850 yards N. 63° W. (N. 31° W. mag.) from the lighthouse, and is steep-to, with a clear passage between it and the shore.

The left extreme of the cliff on Keppel Island, open west of Rich Point, bearing S. 45° E. (S. 13° E. mag.), leads SW.; and Round Head, open north of Black Cape, N. 56° E. (N. 88° E. mag.), leads NW. of Rich Point Shoal.

A rocky bank about 400 yards in extent, within the 10-fathom line, with a least depth of 7 fathoms, lies with Rich Point lighthouse bearing ENE, distant $1\frac{1}{4}$ miles. Fishermen in the locality state that in heavy weather the sea breaks on this bank and on the 9-foot rock north of the point, but in no other position.

Current.—The inhabitants of Port au Choix report that a strong current always sets to the northward, round Rich Point, on the approach of bad weather.

Caution.—As the locality seaward of Rich Point is imperfectly sounded, a wide berth should be given to the point when rounding.

Rich Point Peninsula is flat, composed of gray rocks, and terraced, having several crosses on the summit and slopes.

(H. O. Chart No. 1182.)

Port au Choix, on the north coast of the peninsula, 2 miles from Rich Point, is $\frac{1}{4}$ mile deep and accessible to vessels drawing less than 11 feet water, the entrance being 120 yards wide, narrowed to 50 yards by Le Malouin, a shoal off the south shore.

Anchorage.—The anchorages are west and east of Benie Islet, which lies 250 yards within the entrance, and is joined to the north shore by a sand bank.

Directions.—To enter, keep one-third of the distance across the entrance from the north point, and anchor in 13 feet water between it and Benie Islet; or, if about to make a long stay, wait for high water and round Benie Islet to an anchorage, in 11 feet water, between the two fishing stages on the east shore. Winds from westward bring a swell into the outer anchorage.

Barbacé Cove, a small-boat cove, $\frac{1}{2}$ mile from Port au Choix, affords no shelter with westerly winds; Barbacé Point, the north point of the peninsula, has shoals extending 300 yards from it.

Old Port au Choix (locally termed Back Arm), on the SE. side of Rich Point Peninsula, is separated from Port au Choix by an isthmus 300 yards broad, across which there is a path.

The harbor, one mile long, $\frac{1}{4}$ mile wide at the entrance and $\frac{1}{2}$ mile at the head, is fringed on the western shore by shoals, part of which dry at low water, but the eastern shore is nearly bold-to. It is entered by two channels, one on each side of Querre Islet.

Querré Islet, in the middle of the entrance, is bold-to on the NW. side, but the other shores are foul.

Savage Island, $\frac{1}{2}$ mile NE. of Querré Islet, and nearly joined to it by a chain of rocks and shoals, is 49 feet high, and has several fishermen's huts on it.

Sauvageon Rock lies west of this island, and the latter is joined to the mainland by a bank, with 3 fathoms deepest water over it. Ardent Rock, from which a shoal named Ardent Tail extends 200

yards in a northeasterly direction, lies west of Querré Islet, and is joined to the west shore by shoal water.

Beacons.—The beacons for leading through the channels into the harbor are as follows: A beacon on the SW. extreme of Querré Islet and a similar mark on a small cliff south of the entrance to the harbor in line, bearing S. 19° W. (S. 51° W. mag.). At the head of the harbor are three pyramidal-shaped beacons, the lowest near the shore; center, surmounted by a ball, about 400 yards behind it, and the third on the summit of the land over Gargamelle Cove; they are in line bearing S. 42° W. (S. 74° W. mag.).

For the eastern channel a beacon is erected on the shore, $\frac{1}{2}$ mile S. 50° E. (S. 18° E. mag.) from the beacon on Querré Island; and two beacons on the shore, $\frac{1}{2}$ mile S. 85° E. (S. 53° E. mag.) from the Querré Island beacon, in line bearing S. 54° E. (S. 22° E. mag.), lead over the reef extending to the eastward of the island.

Directions.—Having made the entrance of the harbor, steer for Querré Islet, with the beacon on the south side of the harbor in line with the beacon on the SW. end of Querré Islet, bearing S. 19° W. (S. 51° W. mag.), and when the three beacons at the head of the harbor come in line, bearing S. 42° W. (S. 74° W. mag.), steer for them, this mark leading in the deepest water, through which 28½ feet can be carried into the harbor. When Querré Islet has been passed, keep a little nearer the east shore, and anchor at the head as convenient, in 4½ fathoms water. To avoid the shoals on the west side of the harbor, Round Head must not be brought open north of Savage Island.

To pass east of Savage Island, in 16 feet water, the beacon for the east channel must be brought in line with the east extreme of a rocky islet east of Querré Islet, bearing S. 39° W. (S. 71° W. mag.), which mark leads about 100 yards SE. of Savage Island.

Anchorage may be obtained 400 yards south of Savage Island, in 5½ fathoms water, with shelter from all but northeasterly winds, and temporary anchorage in the bay between Savage Island and Barbacé Point in about 11 fathoms water, over gravel.

Caution.—Steamers, when coasting, should be careful to avoid the nets that are usually set off Barbacé Point.

Ice.—Port au Choix freezes about 15th December, and is completely closed by ice about 3 feet in thickness between that date and the 20th May; but in 1883 the port was blocked till 9th June. Field ice appears about 15th January, disappearing about 15th May. Upon the latter date the first vessel usually arrives, the last leaving about 10th November.

Tides.—It is high water, full and change, in Old Port au Choix at 10h. 40m.; springs rise 7½ feet.

(B. A. Chart No. 1690.)

St. John Bay, comprised between Barbacé and Férolle Points, contains several groups of islands, the largest of which is St. John Island, 5 miles from Barbacé Point. On the east side of this bay are two remarkable mountains named the Highlands of St. John, flat and steep to seaward. The southern, $2\frac{1}{2}$ miles inland, is 1,610 feet, and the northern, $\frac{3}{4}$ mile inland, 1,595 feet above high water.

Caution.—A small rock, of a white color, with a depth of $5\frac{1}{2}$ fathoms on it, over which the sea breaks in heavy northwesterly gales, is situated with Savage Island summit bearing S. 14° W. (S. 46° W. mag.), distant $1\frac{3}{4}$ miles.

NOTE.—Vessels navigating St. John Bay should use B. A. Chart No. 1690 with caution, as in several places the soundings have not been found correct. A note to this effect has been placed on the chart.

Bustard Cove, open to the NW., is 2 miles ENE. of Savage Island, and affords temporary anchorage in 11 fathoms water, but the holding is not good. Shoals extend nearly $\frac{1}{2}$ mile from Chasseurs Point, north of this cove.

Green Islet, surrounded by rocks and breakers, lies $\frac{3}{4}$ mile off Chasseurs Point, leaving a narrow passage between.

Old Man Cove, a shallow indentation 2 miles from Bustard Cove, is fronted by Old Man Shoal, consisting of a bank about 800 yards in diameter with two heads that uncover at low water, situated $\frac{1}{2}$ mile from the shore. This is the only shoal off the shore of the bay till the head is reached, where a stream empties itself through a white sandy beach, and temporary anchorage may be obtained, but the bottom is not good, and heavy squalls sweep down from the Highlands of St. John.

(B. A. Chart No. 2917.)

St. John Island is of moderate height, with a round summit and wooded only at the north point. St. John Harbor, on the west side of the island, a little more than one mile long, in an easterly direction, is a good anchorage for steamers or small vessels, but square-rigged sailing ships require a leading wind to enter.

The two sides of the entrance are nearly steep-to, but the south shore shoals immediately the entrance is passed.

Seal Rocks, low, and difficult to see at night, lie $\frac{3}{4}$ mile SW. of the entrance, and are steep-to on the SE. side, but the NW. side is foul for a little more than 200 yards.

The Fox, a rock nearly awash, situated 100 yards off the first point on the south shore within the entrance, is cleared by keeping Bare Point just to the right of a woody eminence seen in the profile of the land at the head of the bay, bearing N. 60° E. (S. 88°

E. mag.). This mark also leads just south of the shoals off English Point, the first point in on the north shore.

There is no other danger in the harbor, and vessels can anchor in Sesostris Bay in from 9 to 13 fathoms water, over sand and mud, or, if small craft, at the head in 5 fathoms, mud. The holding ground is good and the anchorage convenient for a short time, but a fresh wind soon raises a sea. Vessels of more than 100 feet in length should anchor in Sesostris Bay and haul into the Haven at the head and moor as convenient where the holding ground and shelter is good, but the inhabitants report that in heavy westerly gales the swell rolls in.

The Men-hir, a remarkable rock, stands over the coast a little more than $\frac{1}{2}$ mile NNW. of the entrance to St. John Harbor.

Ice.—St. John Bay fills with northern ice and freezes in December or January, and breaks up in May. During severe winters the ice will extend from New Férelle Point to the Twin and Flat Islands and to Rich Point.

Tides.—It is high water, full and change, in St. John Harbor at 10h. 40m.; springs rise $7\frac{1}{2}$ feet, neaps rise $5\frac{1}{2}$ feet. The tidal streams are not felt in the harbor.

Square Rock, lying south of the peninsula which forms the south side of the harbor, is about 300 yards offshore, and steep-to on the NW. side, leaving a clear passage between it and the mainland, but shoals a short distance off the other sides.

Horn Island, $\frac{1}{2}$ mile NE. of Square Rock, is separated from St. John Island by a channel 100 yards wide, with 13 feet water in mid-channel.

Horn Spit, with 12 feet least water, extends 600 yards NE. by E. from the east side of Horn Island and is steep-to.

Beacons.—There is a beacon on Horn Island which, with another beacon on Flat Point, is used as a clearing mark for the shoals on the east side of St. John Island.

Round Head Island, 750 yards from the SE. shore of St. John Island, is so named from Round Head, a conspicuous hummock 98 feet high, near the west extreme of the island, immediately south of which is Round Head Cove, a shallow inlet.

Round Head Shoal, with 7 feet water over it, extends 250 yards south from the south point of this cove.

Falaise Shoal, with 13 feet water over it, lies 150 yards off the NW. extreme of the island, and has 5 fathoms close north; it is cleared, passing to the northward, by keeping Horn Island a little open NW. of the foot of Round Head, bearing S. 58° W. (West mag.), but the beacons near Well Point are not intended to be used as a clearing mark.

Good Bay, a spacious anchorage between St. John and Round Head Islands, has deep water, but good holding ground, and there is never any sea; it may be entered either from NE. or SW.

A shoal, with $4\frac{1}{2}$ fathoms water over it, lies $\frac{1}{2}$ mile N. 66° W. (N. 34° W. mag.) from Round Head Point, and is the only isolated danger in the harbor.

Beacons.—Two pairs of white beacons indicate the anchorage for large ships in 17 fathoms water.

Well Bay, NW. of Round Head Point, affords good anchorage for small vessels in 7 fathoms water, over sand, but shoal water extends 200 yards from the north shore. The well that gives the name to the bay is a curious excavation, 65 feet deep in the rock, near the path that connects Well Bay with St. John Harbor; the depth of water in the well is about 30 feet.

Beacons.—Two pairs of white beacons, on the shores of Well Bay, indicate the anchorage in 10 fathoms water.

Sheep Island lies off the north shore near the NE. entrance of Good Bay, and has a reef extending 400 yards SE. from it, that is joined to Flat Point, east of the entrance, by a shoal bank.

Barred Bay, formed between Flat Point and Sheep Island, affords anchorage to small craft, but the holding ground is bad.

Hare Island, $\frac{3}{4}$ mile ENE. of Round Head Island, is low and rugged, with shoals extending nearly 400 yards from the SW. extreme.

Passage Shoals, lying between Round Head and Hare Islands, 350 yards from the former, have a deep passage on either side of them, and consist of two heads, the western with 6 feet water over it, and the eastern nearly 200 yards from it, with a depth of $3\frac{1}{2}$ fathoms.

Bayot Shoal, with 7 feet least water, is a large flat $\frac{1}{2}$ mile from the north extreme of Hare Island. Rich Point, seen open, north of Round Head, leads north of this shoal, and the summit of the northern highland of St. John, in line with the middle of the western of the Turr Islands, leads NE. of this shoal. (See H. O. Chart No. 1105.)

The NE. coast of St. John Island is foul from Flat to Turret Points, the latter so called from a circular mound near the extreme.

Wolf Rock, at the NE. extreme of these shoals, is almost joined to Turret Point by rocks and a bank, and is continued SE. by Wolf Tail, a reef $\frac{1}{2}$ mile long. Numerous shoals, with $3\frac{1}{2}$ to 5 fathoms water, lie south of this at a mile distant from the shore. Re-culoux Shoal, the easternmost of these, has over it a depth of $2\frac{1}{2}$ fathoms, and lies $\frac{3}{4}$ mile N. 38° W. (N. 6° W. mag.) from the north extreme of Hare Island.

Clearing Marks.—Round Head Island, open SE. of Flat Point, bearing S. 44° W. (S. 76° W. mag.), leads SE., and the ravine in

the southern highland of St. John, open east of Hare Island, bearing S. 37° E. (S. 5° E. mag.) leads NE. of all these shoals.

Directions.—In proceeding to Good Bay from the southwestward, Horn Spit must be avoided, and Round Head approached to a distance of 200 yards to clear the shoal with 4½ fathoms water. Anchorage may then be had as convenient, but the best place is in 25 fathoms, mud, with Round Head S. 23° E. (S. 9° W. mag.), a little nearer the west than the east coast. From the northeastward, keep the south extreme of Horn Island in line with Flat Point, to pass in mid-channel between Bayot Shoal and those south of Wolf Island, and when Bayot Shoal is passed, keep in mid-channel between Flat Point and Round Head Island.

Tides.—It is high water, full and change, in Good Bay at 10h. 40m.; springs rise 7½ feet, neaps rise 5½ feet.

Turret Bay, ¼ mile west of Turret Point, extends about ¼ mile in a southerly direction and is shallow, but affords good shelter for small fishing craft in from 1½ to 3 fathoms; temporary anchorage may also be obtained off this bay in 12 fathoms water.

Fossil Shoal is a large bank with 6 feet least water, stretching along the line of the coast from the west point of Turret Bay at a distance of nearly ¼ mile from the shore.

Shoal.—A shoal, with 4½ fathoms water over it, lies about 1,600 yards NNW. from St. John Island, but its exact position is doubtful, and shoal casts of from 7½ to 9 fathoms have been frequently obtained in the channel between Twin Islands and those to the eastward.

(B. A. Chart No. 1690.)

Flat Island, about one mile from the west side of St. John Island, is low, smooth, and wooded at the east end, and has rocks and shoals extending off the south side, also fringing the SE. shore to the middle of the island at 600 yards; The Watchman (*Le Guetteur*) is the southeastern of these dangers. The north side is dangerous, and should not be approached nearer than ¼ mile.

Twin Islands, 2½ miles north of Flat Island, are low, flat, and covered with grass. A shoal, with 4 fathoms water over it, lies 1½ miles S. 70° E. (S. 38° E. mag.) from the north extreme of north Twin Island. There is a solitary house on the southern of the Twin Islands.

Turr or Bird Islands (*Iles aux Godes*) lie northeastward of Hare Island, and are low and grassy. The western and highest is one mile from Hare Island, and is joined to the eastern by shoal water.

The Calculus (*Le Calculo*), a small rock halfway between Turr Islands and the mainland, may be approached to a distance of 100 yards all round, and there are clear passages on each side of it.

Whale Islands, nearly 5 miles south of Twin Islands, consist of two large islands, low, flat, and grassy, and several islets and reefs south of them, among which boats find shelter in bad weather. Dolmen (the western) Island has a remarkable cliff 20 feet high at the east extreme, and shoals extend $\frac{3}{4}$ mile south from it; the south sides of these islands should not be approached nearer than a mile.

Freycinet Shoal, with 7 feet water over it, lies $\frac{3}{4}$ mile N. 12° W. (N. 20° E. mag.) from the NE. extreme of Whale Islands.

James Island, $3\frac{1}{4}$ miles ENE. of Twin Islands, is about 20 feet high, covered with grass and clear on all sides, and has at its south extreme a curious rock resembling a vessel under sail.

Fox Islands (Les Jumelles de la Terre), 2 miles north of Whale Islands, consist of two flat islands about 20 feet high, covered with grass, an islet south of the channel between them, and Breton Reef, that uncovers at one mile SW. of the Western Island. Vessels should not pass through the channels in this group, but the passages between Breton Reef, Freycinet Shoal, and James Island are clear. Fishing boats and small schooners anchor in the space between the two large islands, but the holding ground is bad and sea heavy from the north.

Coast.—Squid Cove, south of Castor Point, is shallow and open to the westward; from the north point of the cove shoal water extends nearly $2\frac{1}{4}$ miles, in a westerly direction to Testu Bank, with 4 fathoms water over it. Cloué Shoal, with 3 feet water over it, is between the north point of Squid Cove and Testu Bank, about $1\frac{1}{2}$ miles from the former.

(H. O. Chart No. 606*.)

Castors Harbor, north of Castor Point, and suitable only for small vessels, is entered between Castor and Yellow Points, the former of the two being low, wooded, and bordered by rocks that extend nearly a mile from the shore.

The harbor extends 2 miles eastward from Yellow Point; the entrance is apparently $\frac{3}{4}$ mile wide, but banks stretch off both shores, and they are fringed by shoals, making the entrance narrow and intricate.

Beacons.—There are two beacons on Yellow Point.

White Island, $\frac{3}{4}$ mile west of Yellow Point, has a small rock lying 250 yards north, and shoals extending $\frac{1}{4}$ mile SE. of it, but both island and rock are fairly steep to on the north and west sides. Upon the summit of the larger White Island there is a pile of stones surmounted by three dead trees.

The Bar, a low rock, lying nearly in the middle of the harbor within the entrance, is not easily seen, except at low water, at which time there is no difficulty in rounding the south extreme.

Directions.—From the southward: St. Margaret Mountain, the first high land north of the harbor, should be brought in line with the east extreme of the bare part of Yellow Point, bearing N. 48° E. (N. 81° E. mag.). This mark will lead 180 yards NW. of Testu Bank, 400 yards NW. of the bank off Castor Point, and 450 yards SE. of the shoals off White Island. When a summit to the south of a wooded hill at the head comes in line with the NE. extreme of the high-water line of The Bar, bearing N. 86° E. (S. 61° E. mag.), that course must be steered till the beacons on Yellow Point are in line. Keep the beacons in line astern N. 45° W. (N. 12° W. mag.) and round south of The Bar to the anchorage in 3½ fathoms about east from The Bar.

If the beacons on Yellow Point should be down, a remarkable notch in the highlands of St. John, east of the bare point of that hill, should be kept a little north of the square bowlder on the south shore, S. 45° E. (S. 12° E. mag.).

A small vessel not drawing more than 13 feet water can anchor in the basin at the head by waiting for high water to go there. Caribou and Mosquito Coves at the head are fit only for small schooners. Castor River, on the south shore, flows from a large pond a short distance inland.

Tide.—It is high water, full and change, in Castors Harbor at 10h. 50m.; springs rise 5 feet (approximate). As the tidal stream is strong both in the entrance and at the anchorage, it is better not to enter nor leave except at slack water.

John Meagher Cove, north of Yellow Point, is open to the west and encumbered with shoals off both points and in the cove. Black Islet, NNW. ½ W. about 2 miles from White Island, is low and surrounded by rocks that cover and shoals that extend NNW. ¼ mile from the islet. There is passage for boats only between it and the shore.

Maldigues Cove is 3½ miles wide, between Black Islet and Férolle Point, and is filled with shoals, some of which are a mile from the shore, but may be cleared by keeping Férolle Point east of N. 34° E. (N. 67° E. mag.).

Old Boy Shoal, with 4½ fathoms, lies SSW. 1½ miles from Férolle Point, and with 6½ to 8 fathoms between it and the shoals off Maldigues Cove.

New Férolle Peninsula, of moderate height and partly wooded, is 2 miles long from Férolle Point at the SW. extreme to New Férolle Point at the NE., and is joined to the main by a narrow, low isthmus, over which the masts of the fishing vessels can be seen. The NW. shore is steep-to, but New Férolle Point is foul 400 yards off.

Beacon.—A stone cairn about 20 feet high, surmounted by two dead trees, is erected at a short distance within Férolle Point, and is conspicuous when seen from seaward.

Jehenne Bank.—A rock, with a depth of 16 feet on it, is situated on Jehenne Bank, in a position with New Férolle Point eastern extreme 2,050 yards S. 4° E. (S. 29° W. mag.).

From this rock the bank, within the 10 fathoms line, extends $\frac{1}{2}$ mile SW. by S. and the same distance NE. by N., the western part having $5\frac{1}{2}$ to 7 fathoms over it.

New Férolle Cove extends nearly one mile southward from New Férolle Point, and is exposed to the northeastward. It has bad anchorage, but is much frequented.

An extensive shoal, with from 2 to $2\frac{1}{2}$ fathoms water over it, occupies the center of this cove, extending as far to the NE. as a line between New Férolle to Black Points. Anchorage, in 4 fathoms water, may be obtained at $\frac{1}{2}$ mile S. 28° E. (S. 5° W. mag.) from New Férolle Point.

St. Margaret Bay is entered between Black Point, that separates it from New Férolle Cove and Dog Peninsula, of moderate height, covered with brushwood and faced by cliffs.

This bay is $3\frac{1}{2}$ miles deep, but the eastern portion is filled with islets and shoal banks, among which only very small craft can find shelter. The west side is fairly clear, and anchorage may be had in South Cove though exposed to the northward. Care must be taken, however, to anchor in the small space with mud bottom in not less than 6 fathoms water, with the fall of the highlands of St. John open west of a large square stone at the head of South Cove, and St. Margaret Mountain in line with the west reef inside Rase Island. Everywhere else the bottom consists of slippery rocks with long seaweed, over which the anchor slips continuously. A shoal with $3\frac{1}{2}$ fathoms lies 300 yards inside the anchorage.

Entrance Shoal, with 9 feet water, lies 600 yards east of Black Point and is steep-to. The west shore of the entrance is foul, and to reach the anchorage the extreme of Dog Peninsula should be brought to bear North (N. 33° E. mag.) and kept on that bearing astern.

Beacon.—A beacon, consisting of a stone cairn, surmounted by a staff and barrel, painted black, stands on the eastern point of South Cove; and there is a similar beacon on the westernmost highest point of Dog Peninsula.

Ice.—St. Margaret Bay freezes late in November or in December, and breaks up about the middle of May.

Tides.—It is high water, full and change, in St. Margaret Bay at 10h. 31m.; springs rise $5\frac{1}{2}$, and with strong southerly winds $6\frac{1}{2}$ feet.

(H. O. Chart No. 606.)

Coast.—The coast from St. Margaret Bay to Old Férolle Harbor, a distance of $4\frac{1}{2}$ miles, is low and indented with several open coves, on the shores of which are some huts. This portion of the coast is difficult to distinguish from a distance, and should not be approached nearer than $\frac{1}{2}$ mile.

Woody Hill, 151 feet high, and the highest part of the shore range, is tolerably conspicuous in clear weather, having a bare patch on the sea face that helps to distinguish it when seen against the high ranges of the background.

Brig Bay is immediately east of Grave Point, the NE. extreme of Woody Hill; the point is shoal for 200 yards seaward. A shoal, with 15 feet water over it, is situated 450 yards N. 17° E. (N. 50° E. mag.) from Grave Point, and there are depths of less than 5 fathoms between it and Grave Point.

Entrance Island, 900 yards NE. of Grave Point, forms the NE. side of the entrance to Brig Bay and Old Férolle Harbor; it is about 10 feet in height, 200 yards in diameter, and formed of gray flat stones. Rocks that cover and shoal water extend 470 yards SW. from the island; the north side is shoal for 200 yards, but the east is bold-to; a shingle spit, steep-to, extends from the SE. extreme.

Beacon.—There is a beacon, consisting of a pile of stones surmounted by a pole, on Entrance Island, also a beacon near the SW. extreme of Old Férolle Island, and two leading beacons, consisting of poles surmounted by casks colored white, situated on the shore SE. of Front Point, but no dependence should be placed on their being in position.

Directions.—To enter by the Southern Pass, the two leading beacons should be brought in line, bearing S. 62° E. (S. 29° E. mag.), which leads SW. of the shoals extending from Entrance Island, and about 100 yards NE. of the 15-foot rock off Grave Point; when the beacons on Entrance and Old Férolle Islands come in line, bearing about N. 14° E. (N. 47° E. mag.), or when Grave Point bears S. 22° W. (S. 55° W. mag.), these shoals will be passed, and the beacons in line may be used as a stern mark, or the west shore of Brig Bay should be steered for, keeping it 150 yards distant, until the first cove opens on the west shore, when anchorage may be obtained in $6\frac{1}{2}$ fathoms water, over mud, with good holding ground.

Vessels bound north and requiring only temporary anchorage should go to this bay, as it can be left easily with westerly winds.

Old Férolle Island, bare on the seaward face and covered with gray flat stones, is separated from the north side of Entrance

Island by a channel 200 yards wide, which is used by boats and small schooners. A small rock lies in the middle of this channel. The highest parts of the island facing the sea are covered with dead trees, except one-third of the west end, that is grassy.

Beacon.—A beacon, consisting of a pile of stones surmounted by a pole, stands on West Mound (52 feet), but should not be depended on as being in position.

Old Férolle Harbor, formed between the mainland and the islands off, is about one mile in a NE. direction with an average breadth of 300 yards between the 5-fathom lines, and entered by two channels, Southern Pass, south of Entrance Island, and Northern Pass, east of Fish Island, the latter practicable for small vessels only. Local magnetic disturbance of the compass has been reported here.

Directions.—Bring the beacons in line, bearing S. 62° E. (S. 29° E. mag.), and steer for them until Debon Peninsula opens east of Entrance Island, bearing N. 57° E. (East mag.), then round into the channel, passing rather less than 200 yards from Entrance Island, and between it and the mainland, keeping near the north shore, and anchor NW. of Debon Peninsula in from 6 to 9 fathoms water, or proceed farther NE. and anchor in 7 fathoms, with the freshwater stream bearing N. 80° E. (S. 67° E. mag.).

To proceed to the northward by the north channel from the anchorage, the east shore of Old Férolle Island must be kept close aboard, and Entrance Island just shut in, bearing S. 43° W. (S. 76° W. mag.), before the stream bears East (S. 57° E. mag.); this mark will lead in 3½ fathoms at low water. When the east extreme of Fish Island bears North (N. 33° E. mag.) steer for it, and anchor as convenient in 7 fathoms water, over mud.

To enter by the Northern Pass, it would be better to mark the east end of the bank off Fish Island by a buoy or boat. This bank should be passed at a distance of 40 yards, and when rounded, steer for ¼ mile toward the summit of Old Férolle Island, when anchorage may be obtained in 7 fathoms water, over mud.

This entrance is difficult to distinguish, and care should be taken not to mistake another passage between the islands for it.

Tides.—It is high water, full and change, in Old Férolle Harbor at 9h. 46m.; springs rise 5 feet (approximate). The tidal streams follow the direction of the wind when it blows freshly, but the flood runs ordinarily to the south and the ebb to the north.

Seal Cove, ¼ mile north of Fish Island, is open to the west and does not afford good anchorage. Seal Point, north of this cove, has a reef extending from it 350 yards.

Cape Ste. Geneviève, ¼ mile NE. of Seal Point, is low, covered with small trees, fringed by shoals, and should not be approached within ¼ mile.

Cape Islet, a small islet, is nearly joined to the north side of the cape by shoal water.

Pond Cove, east of this islet, is a mile deep, completely open to the north and filled with shoals. The east side of this cove is formed by Southwest Point, low, wooded, and narrow.

Entry Island lies close north of Southwest Point, with shoal water between and passage only for small boats. It is composed of shingle with a little verdure at the summit, is low and difficult to recognize. Reefs stretch west of this island, leaving only a passage 200 yards wide between them and the shoals off Gooseberry Island.

Gooseberry Island, a little more than $\frac{1}{2}$ mile north from Entry Island, is low and flat, covered with grass and with steep sides, and is nearly a mile long and 300 yards wide. The SW. portion is bordered by reefs that extend two-thirds of the distance to Entry Island, near the extreme of which is Porpoise Rock, that uncovers at half tide and is 600 yards from Entry Island.

Lobster Island, with a small green mound on it, lies a short distance east of the NE. point of Gooseberry Island, and continues SW. in shoals and rocks for a distance of 200 yards.

A Bank, part of which uncovers at low water, lies between Lobster Island and Porpoise Rock.

Green Rocks, 600 yards SE. of Lobster Island, cover at high water and are bold-to on the south side. There is a depth of 19 feet in the channel between Green Rocks and Lobster Island.

Current Island, about $\frac{1}{2}$ mile north of Gooseberry Island, is larger than the latter, but about the same height; it is flat and covered with verdure. The outer coasts are fringed by bowlders, and have a depth of 6 fathoms 200 yards from the shore. Fisherman Cove is a small indentation on the north side, in which are some huts. Current Island is separated from the mainland by North Pass, $\frac{1}{2}$ mile wide, with 3 feet in it at low water.

Beacon.—A beacon, consisting of a pile of stones surmounted by a pole, is situated on the west mound.

St. Geneviève Bay is formed by Entry, Gooseberry, and Current Islands and the mainland. All the east coast of the bay is wooded, low, and without any distinctive features. It is bordered by shoals, several of which are grouped off the SE. side of Entry Island, leaving, however, sufficient space for a good anchorage for fishing craft between them and Entry Island, in $3\frac{1}{4}$ to 5 fathoms.

Great Bank, $\frac{3}{4}$ mile long, is 1,400 yards ENE. of Entry Island and $\frac{1}{2}$ mile from the east side of the bay. Several portions of this bank uncover at low water, but there is a clear passage between it and the main.

A Shoal, with 10 feet water on it, lies halfway between Great Bank and Entry Island.

Crab Rocks, 200 yards north of Lobster Island, cover at high water, with the exception of three small heads. They are surrounded by a shoal bank in all directions, and, with the shoals off Gooseberry and Current Islands, nearly block the channel.

Mutton, Coot, and Beef Islands stretch in a line south of the eastern end of Current Island, separated from themselves and Current Island by channels fit for boats only. From the southern, Beef Island, a bank with 13 feet deepest water stretches to the mainland.

Anchorage with perfect safety may be had east of the passage between Beef and Coot Islands in 5 fathoms, mud.

A Bank extends NE. of Mutton Island, leaving only a narrow passage between it and the mainland, into which small craft may enter by keeping close to the mainland till Current Island north extreme bears N. 33° W. (North mag.).

Directions.—No stranger should enter this bay without a pilot. The channels are intricate and narrow, the passages lying between dangerous sunken rocks.

Ice.—St. Geneviève Bay freezes late in November or during December, and breaks up about the middle of May.

Tides.—It is high water, full and change, in St. Geneviève Bay at 10h. 43m.; springs rise 6½ feet, neaps rise 4 feet.

(H. O. Chart No. 660.)

Black Duck Cove, one mile NE. of Current Island, is an open bight, where there are several fishermen's houses.

St. Barbe Point, nearly 2 miles NE. of Current Island, is bordered by a shingle beach and broken white stones, and the coast is tolerably steep, low, and wooded, and should not be approached nearer than 400 yards.

Beacon.—A beacon, consisting of a pile of stones surmounted by a dead tree, stands on the point.

St. Barbe Bay, 1½ miles wide between St. Barbe and Anchor Points, is fringed on its north and east shores by dangerous shoals, the western of which, Winter Flat, with 10 feet least water over it, is nearly 800 yards offshore; outside the harbor the holding ground is very foul and rocky.

St. Barbe Harbor, at the south end of the bay, is entered between Harbor Point on the west side, which may be recognized by a lobster factory on it, and Stony Point on the east, which is marked by three beacons. The rocks are limestone of nearly horizontal strata; shoal water extends a short distance off both shores, and the harbor stretches in an easterly direction with depths of 3½ to

4½ fathoms; from this it gradually shoals in the same direction to East River.

Beacons.—The outer beacon is close to the beach, and consists of a post with a whitewashed barrel on the top; the middle beacon consists of a cone with a stick on top; the inner beacon has two cones placed vertically, the upper of which is white and surmounted by a cross; when in line these beacons bear S. 69° E. (S. 35° E. mag.).

Directions.—Bring the beacons on Stony Point in line, to pass between Winter Flat and the shoal water off the south shore, in not less than 6 fathoms water; when the house in Traitant Cove (the first bend on the west side of the harbor) comes open of Harbor Point, bearing about south (S. 34° W. mag.), steer mid-channel into the harbor and anchor in 4½ fathoms water, over mud, good holding ground, with the wharf in Traitant Cove bearing S. 44° W. (S. 78° W. mag.) and Harbor Point N. 46° W. (N. 12° W. mag.). The settlers report that the bay breaks right across after heavy westerly gales.

Ice.—St. Barbe Bay freezes late in November or during December, and breaks up about the middle of May.

Tides.—It is high water, full and change, in St. Barbe Harbor at 10h.; springs rise 4 feet, neaps rise 3 feet. The stream in the center runs one hour after the inshore tide.

Winter Cove, in the NE. corner of St. Barbe Bay, is completely open to the westward, and the entrance is partially obstructed by reefs stretching from the south point.

Ice Point, low and narrow, with shoals off the extreme, lies half-way between Winter and Anchor Coves.

Anchor Point is low and continued by a ledge extending ½ mile. The beacons on Stony Point in line lead well clear of this ledge.

Anchor Cove is situated immediately east of the point and is open to SW. A few schooners can moor head and stern and lie in safety, as the heavy sea breaks on the entrance points, and only the swell runs up the cove. The houses at the head of this cove are very conspicuous.

The Coast to the northeastward of Anchor Point is low and shoal, and should not be approached nearer than ½ mile.

Deadman Cove, 1½ miles from Anchor Point, contains some houses, and is marked by a conspicuous black cliff on the north point.

Bear Cove, ¾ mile northeastward, also contains some houses.

Sea Islands, 3¼ miles from Anchor Point, are a group of four islands and some rocks, separated from the main by a narrow channel fit for boats. The outer island is of white rock, and the inner and largest covered with grass, with several houses near the summit.

Seal Ledges lie NW. 300 yards from Seal Islands and are steep-to.

Pilot Bank, with $5\frac{1}{2}$ fathoms water over it, but on which a depth of 19 feet has been reported, lies $1\frac{1}{5}$ miles N. 86° W. (N. 52° W. mag.) from Capstan Point and off the entrance of Flower and Nameless Coves; it is about 400 yards in extent in a N. by E. and S. by W. direction.

Flower Cove, eastward of Seal Islands, is much frequented by fishing craft, and affords good anchorage to vessels of moderate length drawing less than 16 feet water, but is not readily recognized, there being nearly as many houses on Inner Seal Island and in Nameless Cove, $1\frac{1}{2}$ miles to the northward. The courthouse, a large, square house, of a much darker color than any of the others, is situated on the highest part of Capstan Point.

The cove is nearly one mile long, $\frac{1}{4}$ mile wide at the entrance, and narrows to the head. Rocky Islet lies in the middle of the entrance, with shoal water between it and the north shore.

It is reported that the depths in Flower Cove have shoaled, and that there are $2\frac{1}{2}$ feet less water than is charted.

Directions.—Seal Island should be rounded at a distance of at least $\frac{1}{4}$ mile to clear Seal Ledges, and when the rocky islet bears N. 86° E. (S. 60° E. mag.) it may be steered for and passed in mid-channel between the islet and the south point.

Anchorage may be had eastward of the islet in $3\frac{1}{2}$ fathoms, or by keeping farther east in mid-channel, in the same depth, inside the peninsula on the south shore.

Tides.—It is high water, full and change, at Flower Cove at 10h. 6m.

Capstan Point, north of this cove, is low, fringed by a stony beach, and continued by shoals $\frac{1}{4}$ mile.

Nameless Cove, NE. of Capstan Point, is fit only for vessels drawing less than 9 feet. It is nearly filled by islands and shoals. Flower Island is the western and largest, surmounted by a house. Herb Island, the next highest, is E. by S. of it, and north of the passage between these two is Slab Island, the lowest.

Directions.—Bring the eastern fishing stage at the head a little open north of Herb Island, N. 61° E. (S. 85° E. mag.), and pass between that and Slab Island at a third of the distance across from Herb Island, and when the western fishing stage bears North (N. 34° W. mag.) steer for it and anchor in $3\frac{1}{2}$ fathoms, with the north extreme of Slab Island West (N. 56° W. mag.). Care must be taken to avoid a bank NE. of Herb Island. There is another small space for anchorage, reached by passing east of the bank NE. of Herb Island, in 13 feet water.

Small craft enter this cove by passing between Herb Island and the south shore.

The anchorage SW. of Flower Island off the entrance of Nameless Cove is bad.

Flower Ledges, parts of which uncover at low water, extend $\frac{1}{2}$ mile NW. of Flower Island. To pass west of Flower Ledges keep the houses in Bear Cove open west of Seal Islands.

Grenville Ledges, with 2 feet water, are $\frac{1}{2}$ mile NE. of Flower Ledges, and are 600 yards from the coast.

Mistaken Cove, NE. of Nameless Cove, is nearly dry at low water; the surrounding coast is low and covered with vegetation.

Savage Cove, $1\frac{1}{2}$ miles from Mistaken Cove, affords good anchorage to small vessels, in 13 feet water, and is easy of access.

The passage in is north of Cooper Island, that is nearly joined to the south shore, and on which are the fishing establishments. Strong north winds produce a heavy swell in the cove.

Tides.—From Anchor Point to Belle Isle Strait the tidal streams along the coast sometimes attain a velocity of 2 knots an hour, and assist in making navigation dangerous. When not influenced by a strong breeze, the flood runs SW. and the ebb NE.

(H. O. Chart No. 974.)

The Coast from Anchor Point to Cape Norman is low, without any remarkable feature.

Sandy Bay, a little more than a mile NE. of Savage Cove, is quite open. Small vessels can find temporary anchorage in $4\frac{1}{2}$ fathoms, with shelter from east to SW. through south.

Double Ledge, with 8 feet water, lies a little more than $\frac{1}{2}$ mile off the shore, nearly 2 miles from Sandy Bay.

Green Island, $\frac{1}{2}$ mile off shore, 5 miles NE. of Sandy Bay, is narrow, low, and covered with grass at the summit, and can be seen 10 miles in clear weather.

A Reef stretches $\frac{1}{2}$ mile off the NE. end of the island and breaks with any sea. The east extreme of the reef is within $\frac{1}{2}$ mile of the Newfoundland shore.

Anchorage may be had in 8 fathoms between Green Island and Newfoundland, with fair shelter from all winds, but those from east and west produce a tolerably high sea.

Straight Coast begins at the west point, 4 miles from Green Island, and runs in nearly a straight line 20 miles to Boat Peninsula. It is fringed by gray rocky cliff, steep-to. There is a small creek for boats $11\frac{1}{2}$ miles from Green Island, and another about a mile farther east. The coast is barren throughout.

Boat Peninsula projects about $\frac{1}{2}$ mile. Boat Stern, the west point, is steep and forms the east point of Open Bay, off the west point of which shoal water extends some distance. Boat Head, the east extreme of the peninsula, is surrounded by a dangerous reef

extending some distance from the shore. Boat Cove, east of Boat Peninsula, is open to the northeastward. Small vessels can anchor there with offshore winds.

(H. O. Chart No. 151.)

Cape Norman, a point of bare rock with low cliffs, is steep-to on its west and north sides, but south from it the coast becomes foul.

Light.—From a hexagonal tower, 55 feet in height and painted white, a revolving white light, with a period of revolution of two minutes, is exhibited at an elevation of 116 feet, and should be visible 16 miles.

Fog Signal.—A steam fog horn gives blasts of five seconds duration at intervals of thirty-five seconds during thick or foggy weather. The fog-signal house is 70 yards east of the lighthouse and elevated 67 feet above high water.

Tidal Streams.—At Cape Norman the inshore streams run two hours after high and low water, and in the center of the strait until four hours after.

Cape Norman Bay, a mile wide between Whale Point and the NW. extreme of the peninsula dividing it from Cook Harbor, is entirely open to the northeastward, and affords no safe anchorage.

Cook Point is a low tongue of land, off which Cook Rocks and other dangers extend $\frac{1}{2}$ mile.

Priest Rock, with 13 feet water, is the western of these shoals and lies 1,300 yards N. 18° W. (N. 16° E. mag.) from Cook Point.

Norman Rock, with 16 feet, is the eastern, and is 1,300 yards N. 35° E. (N. 69° E. mag.) from Cook Point.

To pass between these two shoals, keep Whale Cave (Le Trou de la Baleine) under Burnt Cape, between Black Island and Black Rock, bearing S. 46° E. (S. 12° E. mag.).

Cook Harbor is formed south of Cook Point by a group of islands lying parallel to it.

Neige Bay is a small indentation NW. of Fauvette Island, with a fishing establishment on the shores.

The entrance of the harbor is not easily distinguished from the eastward, the uniform height of the land rendering recognition difficult. The summit of Cape Dégrat, kept between Cape Onion and the Mewstone, bearing N. 87° E. (S. 59° E. mag.), will lead to the entrance. Enter the harbor on the south shore, keeping about $\frac{1}{4}$ mile from Green Island and 300 yards from Schooner Island. Round nearly 200 yards SW. of Prosper Islet, then steer for the NE. point of Neige Bay, to clear the shoals NE. of Fauvette Island, and anchor in from 4 to 5 fathoms water, over sand and mud.

Tides.—It is high water, full and change, at Cook Harbor at 7h. 25m.; springs rise $3\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet.

Pistolet Bay is entered between Black Island and Burnt Cape, a width of 3 miles, is 6 miles deep and 5 miles wide at the head. Shallow Bay, on the west side of Pistolet Bay, is formed by the main and Boisées Islands, a group extending south from Schooner Island. There is anchorage in 4 fathoms just west of Boisées Island, but the bottom is sprinkled with bowlders, the holding ground is bad, and sea from the eastward reaches the anchorage.

All the SW. part of Pistolet Bay being exposed to NE., affords only temporary anchorage, and the shores at the head are shallow $\frac{1}{2}$ mile from the shore.

Burnt Cape, the east point of the entrance of Pistolet Bay, is the extreme of a high barren peninsula of a whitish color 223 feet high. On the west face is a deep hole, called Whale Cave (Le Trou de la Baleine), conspicuous from westward.

Triangle Point, low and wooded, stretches $\frac{1}{2}$ mile from the south shore of the bay, and is continued by banks that leave a passage a mile wide between them and Dog Bank.

Chien (Dog) Rock nearly covers at high water, and is the summit of a bank extending nearly $1\frac{1}{2}$ miles from the SW. extreme of Burnt Cape Peninsula.

Milan Arm is at the SE. end of the Pistolet Bay, and extends $3\frac{1}{2}$ miles to the southeastward and 2 miles to the eastward. On the north side of the entrance is Trompe l'Œil Point, composed of low rocks and bowlders, running parallel to the south shore of the bay, and continued by shoals for a distance of about a mile.

Parker River empties just west of the entrance to Milan Arm. A group of huts marks the entrance to the river and the south point of Milan Arm. A salmon fishery is carried on here by some Indians.

Mic-mac Islet lies in the entrance to Milan Arm, and is small and grassy.

Directions.—To find anchorage in Pistolet Bay available for vessels of moderate draft only: Steer up the bay with Triangle Point bearing S. 20° W. (S. 54° W. mag.) or nearly parallel to the west side of Burnt Cape. Dog Rock will soon be seen if carefully looked for, and the huts at the entrance to Parker River. On this course, when the huts bear S. 41° E. (S. 7° E. mag.) steer S. 31° E. (S. 3° W. mag.) for the gap in the hills south of the huts, to pass between Dog Rock and Triangle Point Banks. Round Dog Rock at $\frac{1}{2}$ mile, when a fair anchorage will be found in $4\frac{1}{2}$ fathoms, stones and gravel.

A small vessel may proceed to the best anchorage in the bay, off Parker River. A vessel drawing less than 16 feet water can enter

Milan Arm by passing north of Mic-mac Islet. When east of Mic-mac Islet anchor as convenient in the middle of the arm, but the cove east of Milan Point must not be entered.

This last anchorage should not be taken without a pilot. Vessels may also proceed to the head of the arm with a pilot, where anchorage may be had in 2 to 3 fathoms, mud.

Caution.—Current.—The local pilots state that a constant current sets out of Milan Arm, in a westerly direction, supposed to be caused by the number of fresh-water streams pouring into the arm. When leaving the anchorage, therefore, care must be taken that the ship is not set by it to the westward, toward the shoals extending from Triangle Point.

Ice.—The upper part of the arms of Pistolet and Sacred Bays freeze in December, and the bays fill from Cape Norman to Cape Bauld; the ice breaks up in May according to the season.

Tides.—It is high water, full and change, in Pistolet Bay at 7h. 39m.; springs rise $3\frac{1}{4}$ feet, neaps rise $2\frac{1}{4}$ feet.

Ha-ha Bay, east of Burnt Island, is $1\frac{1}{4}$ miles wide and a little more than 3 miles deep. Piton Point is the extreme of a flat hummocky peninsula extending from the east shore, fringed by rocks, steep-to on the north side, and narrowing the entrance of the harbor to 900 yards. South of the peninsula the bay is filled with shoals, so that vessels can not get shelter behind Piton Point. The isthmus separating Ha-ha Bay from Pistolet Bay is low and 700 yards wide. The north point of Piton Point Peninsula should not be approached close-to, or the shore off the isthmus.

The Coast from Ha-ha Bay to Cape Onion, $3\frac{1}{4}$ miles, is cliffy and steep, with some small coves that afford no shelter except for boats with offshore winds.

Cape Onion is 259 feet high and easy to recognize by the Mewstone (Gros-ognon) close off the NE. extreme. The cape is the extreme of a peninsula, the north face composed of black cliff, and the isthmus $\frac{1}{4}$ mile wide between Savage Cove and Sacred Bay. On the ledge, extending from Cape Onion to the Mewstone, are two other cliffy hummocks. These rocks form the north shore of Onion Cove, on the south part of which are some fishing establishments. The south shore of the cove is foul, and it is exposed to the northeastward.

Onion Island (Île à Bourge), composed of flat rocks, on which are a round hillock and a remarkable square rock, is south of the cove. The south side is bold-to, and the east side may be approached to a distance of 200 yards.

Sacred Bay, entered between Capes Onion and Artimon, is 3 miles in width and nearly 3 miles deep. Numerous islets and shoals encumber the west side of the bay, and form West and South Roads, the only safe anchorages.

Low Islets, nearly $\frac{1}{2}$ mile SW. of Onion Island, are connected by reefs to the north shore, but steep-to on the south side.

Little Harbor is west of Low Islets, between them and a peninsula $\frac{1}{2}$ mile farther SW., that terminates in Fauvette Point, long and narrow, steep-to on the south side, with two fishing stages projecting from it. The harbor is only a small curve in the coast, and the sea from the east fetches home, but good anchorage may be had in 5 fathoms, sand and mud, with Onion Island showing between Low Islets and the main.

Mauvais Gars is a small rock, $\frac{1}{2}$ mile east of Fauvette Point, that covers at high water, and from which a reef extends 100 yards to the southwestward.

Bon Gars and Petit Gars are connected nearly to Fauvette Point. Bon Gars, the southern, is always above water, and steep-to on the south and west sides. It is 400 yards from Fauvette Point.

Moyacs Islands are a group at the NE. extreme of the shoals on the SW. shore of the bay.

A Shoal with 16 feet water lies 350 yards NNE. from the northern of Moyacs Islands, and is steep-to on its outer sides.

West Road, a semicircular basin SW. of Fauvette Point, is $\frac{1}{2}$ mile deep, but shoal water extends $\frac{1}{2}$ mile from the shore. To enter bring Onion Island just open east of Low Islets, bearing N. 40° E. (N. 74° E. mag.), and run on that mark between Mauvais Gars and the bank off Hostis Island, until Bon Gars bears West (N. 56° W. mag.), when it may be rounded at 200 yards distant and good anchorage obtained, but care must be taken to avoid an isolated rock, having 19 feet water on it, lying 700 yards S. 60° W. (N. 86° W. mag.) from Fauvette Point, or nearly in the middle of West Road.

South Road may be entered between Curlew Point and Moyacs Islands, steering for Green Island open west of Curlew Point, off which latter shoal water extends about 200 yards, and when the square rock on Onion Island is seen just west of the southern Moyacs Island, bearing about N. 12° E. (N. 46° E. mag.), keep that mark astern, and it will lead to the South Road, passing close west of a rock that covers, off the east shore. When that rock is passed, haul to the southward and anchor in 5 fathoms water, over sand and mud.

The basin at the head is shoal for 1,600 yards from the east shore and 1,400 yards from the west, limiting the anchorage space to 600 yards in diameter.

Tides.—It is high water, full and change, in South Road at 7h. 23m.; springs rise about 3 feet.

(H. O. Chart No. 608.)

The Coast between Curlew Point and Cape Artimon is low & shallow, affording neither anchorage nor shelter from north winds.

Cape Artimon, the north point of an island 400 yards from the main, is cliffy and easy to recognize. Shoals extend 250 yards NW. and a group of islets and shoals nearly $1\frac{1}{2}$ miles NE.

Sacred Islands, off Sacred Bay, are easy of recognition, and have clear passages between themselves and the main.

Great Island is nearly a mile long, steep-to all round, covered with grass, and the highest point at the top of the cliff forming the north side of the island is 269 feet above high water. It lies a little more than $1\frac{1}{2}$ miles northeastward of the Mewstone.

Maudit Bank, with 7 fathoms water, breaks in bad weather, and lies nearly 2 miles N. 16° E. (N. 50° E. mag.) from Great Island.

Little Island, nearly a mile SE. of Great Island, and $\frac{1}{2}$ mile from Cape Artimon, is lower than Great Island, and steep-to except off the south extreme, which should not be approached nearer than 200 yards.

Verte Island, $\frac{1}{2}$ mile NE. of Cape Artimon, is low, grassy, and surrounded by reefs, leaving a passage 300 yards wide between them and the shoals off Cape Artimon.

Le Grand Mulou (Northwest Ledge) is the NE. extreme of the ledges off Cape Artimon, and is the summit of a bank, with 6 feet least water, 300 yards in diameter.

Clearing Marks.—The Mewstone, touching the south extreme of Little Sacred Island, leads north, and the summit of Great Sacred Island in line with the north extreme of Little Sacred Island leads NE. of this shoal.

Maria Reefs, $\frac{1}{2}$ mile from Verte Island and $\frac{1}{2}$ mile NE. of Cape Ardoise, are a group of black islets, some of which are 7 feet above high water. Two shoals, with 16 feet water on each of them, are situated between Maria Reefs and those off Verte Island.

Médée Bay lies SE. of Cape Artimon and is obstructed by shoals and islets. At the head are some fishing stages. Cape Ardoise, east of the bay, is a remarkable round gray hill, 184 feet above high water.

Maria Bay, south of Cape Ardoise, is open to the eastward and affords no shelter. Cape Raven, the east point of the bay, is steep, and a little west is a high cliffy point called Cape Noir.

A rock, with 6 feet water, lies nearly in the middle of the entrance to Maria Bay, 800 yards S. 65° E. (S. 29° E. mag.) from Cape Ardoise.

From it Foirou Island is seen in line with the middle of Maria Reefs.

Mauve Bay (Noddy Harbor) is $\frac{1}{2}$ mile wide between Cape Raven and Noddy Point, the latter formed of a steep hillock, terminating in a double tier of low, flat rocks, steep-to. The bay is $1\frac{1}{2}$ miles deep; both sides are high and tolerably steep at the entrance.

Garden Cove is situated halfway up the bay on the west shore and is 300 yards deep, with shoal water 100 yards off shore. Anchorage may be had by small vessels in 16 feet, sand, fair holding ground, but easterly swell sometimes reaches in. An islet lies on the east coast of Mauve Bay opposite Garden Cove. The deep water runs in a narrow gully to the head, where anchorage for a few small vessels may be obtained in $3\frac{1}{2}$ fathoms, good holding ground. Westerly winds are violent, but the anchorage is safe, and the sea from north does not reach in. The rest of the bay affords no shelter from the sea.

Wood Bay, east of Noddy Point, between it and Jacques Cartier Island, is exposed to the north and affords no shelter.

Jacques Cartier Island is separated at the SW. extreme from the mainland by a channel passable for boats, 50 yards wide. The north and east points are steep-to, a bank of rocks lies southeastward of the east point extending 100 yards from the shore. There are several fishing establishments on the island, with their stages on the east side.

Vincent Islet, 16 feet high and covered with grass, is situated 200 yards off the mainland point SE. of Jacques Cartier Island, leaving a tortuous passage between them with 15 feet water.

Kirpon Island forms the north extreme of Newfoundland, is $3\frac{1}{2}$ miles long and $1\frac{1}{2}$ miles wide, and separated by a channel 100 yards wide from the mainland. It is high and bold, the summit over Cape Dégrat being 505 feet high.

Cape Bauld, the north extreme, is bold-to, and from it the coast trends southwesterly $2\frac{1}{2}$ miles to Dumenil Point, and then southerly to form Kirpon Harbor.

Light.—A square wooden lighthouse, 54 feet in height and painted white, stands on the high ground near the extremity of Cape Bauld, and exhibits, at the elevation of 154 feet, an alternating red and white light, each having a period of system of forty-five seconds; it should be visible 18 miles.

Fog Signal.—During thick or foggy weather, a steam fog horn will give blasts of ten seconds duration every minute.

The Islets are a group of low rocks, continued to the SW. by a reef that leaves a clear passage only 200 yards wide between it and Jacques Cartier Island. A fishing establishment is on Kirpon Island, SE. of the islets.

Merchant Island is a low projection with a fishing establishment, close to Kirpon Island, 600 yards SE. by S. of the islets.

Morne Fontan, a conspicuous hill 105 feet high, is $\frac{1}{4}$ mile SSE. of Merchant Island.

Kirpon Harbor is between Jacques Cartier and Kirpon Islands, and affords excellent anchorage for any vessel.

Supplies.—Fresh mutton and vegetables are usually to be obtained at Kirpon.

Beacons.—A beacon stands on the western side of Merchant Island, and another beacon, consisting of a white staff with a black ball at the top, about 400 yards southeastward of it, near the summit of Morne Fontan; three beacons are placed on the mainland, SE. of Jacques Cartier Island. The lower beacon consists of a pile of stones, and a cask "on end" upon it; the center beacon is a pile of stones with a pole and cask; the upper beacon consists of a pile of stones with a pole and triangle. These beacons and the rocks immediately below them are whitewashed, and are used by the French vessels of war as mooring marks.

Anchorage.—Vessels can proceed to an anchorage in from 8 to 9 fathoms water, over mud, north of Vincent Islet, taking care to avoid the bank off that islet.

Vessels drawing more than 16 feet can not go farther south than Vincent Islet, bearing S. 56° W. (west mag.), but small vessels may find good anchorage south of that islet.

Vessels drawing 12 feet water can pass south of Kirpon Island.

Peaked Rock covers at high water, and lies 100 yards north of the mainland point forming the channel south of Kirpon Harbor.

Canias Rock lies 250 yards off Kirpon Island, between the last two fishing stages on the SW. side of that island, and is always visible. About 3 feet less water than charted is reported at 300 yards N. 70° W. (N. 36° W. mag.) from Canias Rock (1896).

Directions.—When approaching Kirpon Harbor, the beacon on the west shore of Merchant Island, kept in line with the beacon placed near the summit of a hill, bearing S. 69° E. (S. 35° E. mag.), leads between the NE. point of Jacques Cartier Island and the reefs northward of that point; round the NE. point of Jacques Cartier Island as convenient, and anchor in 7 or 8 fathoms water; the beacons situated SE. of Jacques Cartier Island in line, bearing about S. 24° W. (S. 58° W. mag.), lead to the anchorage. In misty weather the beacon on Merchant Island is difficult to distinguish, in which case the NE. point of Jacques Cartier Island should be borrowed on.

Ice.—Kirpon Harbor freezes between 10th and 25th December, and breaks up between 5th and 25th May.

Tides.—It is high water, full and change, in Kirpon Harbor at 7h. 5m.; springs rise 5 feet, neaps rise $1\frac{1}{2}$ feet.

Tidal Streams.—The streams often attain a velocity of 3 knots an hour in the passage between Kirpon and Little Kirpon Harbors, but the direction depends more on the winds prevailing, or that have prevailed, than on flood or ebb. The tidal streams are irregular between Cape Onion and Kirpon Island, but the floods run ordinarily to the west and ebb to the east. If the tide is with the wind, it attains the velocity of one knot an hour.

Foirou Island (Gull Rock), $2\frac{1}{4}$ miles west of Cape Bauld, is a low round rock 100 yards in diameter, from which a shoal extends 350 yards in a southeasterly direction.

Kirpon Harbor at

velocity of 3 knots
Kirpon Harbors,
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CHAPTER VII.

NEWFOUNDLAND, EAST COAST—CAPE BAULD TO CAPE ST. JOHN.

(H. O. Chart No. 608.)

Strait of Belle Isle.—(For description of Strait of Belle Isle, see Chapter X.)

Cape Bauld is the SE. point of the entrance to Belle Isle Strait. It is a rocky, barren point, steep-to, around which are strong, variable, eddying tides.

Light and Fog Signal.—(See page 304.)

Tidal Streams.—The flood and ebb streams at Cape Bauld continue running inshore NW. and SE., respectively, three hours after high or low water, and 6 to 7 miles NE. of the cape they will continue running five hours after.

Grande Cove, east of Cape Bauld, is exposed to northeasterly winds; the south point is an island, 88 feet high, joined by bowlders to the mainland, that, with a rugged point south of it, forms Colombier Cove, a temporary shelter for fishing boats.

Coast.—Between the point to the southward of Grande Cove and Cape Dégrat is a bay 1,200 yards deep, divided into numerous coves by islands and points, off which are dangerous shoals, and, for general navigation, vessels should not enter west of the line joining the points of this bay.

Pigeon Cove, the northernmost, is small, and can shelter only one vessel. Dégrat and Sheep Islands are immediately south of this, the former joined to the mainland at low water, continued to the NE. by reefs for nearly $\frac{1}{2}$ mile.

Sheep Bank, with 6 feet water, lies 350 yards ENE. from the high-water line of Sheep Island.

Dégrat Harbor is a small cove where six fishing vessels can be moored in 13 feet water inside a flat rock on the east side. Sheep Channel, between Sheep and Dégrat Islands, is the best passage to this harbor, and after passing Sheep Bank, which may be avoided by keeping the north side of Sheep Island close on board, the channel is clear, though narrow.

Cape Dégrat is surmounted by a hill 505 feet above high water, the highest on this part of the coast, faced by a steep cliff 300 feet high, with deep water close alongside. The cliffs fall at the south end to White Point, a landslip in the cliffs, of a lighter color than the rest of the coast.

Grands Galets Bay is situated south of the cape, but affords no shelter.

Little Kirpon Harbor lies off the south point of Kirpon Island. It is entered between the island and the main. The harbor is $\frac{1}{2}$ mile long from Herbert Point to the entrance of Noble Cove, which is shallow and 250 yards broad, but the holding ground is bad.

Vessels drawing less than 12 feet water may pass south of Kirpon Island to Kirpon Harbor, but as the tides are strong, great care must be taken to avoid Butter Pot Rock, that lies nearly in the middle of the north bend, and is nearly always covered.

White Islands are east $2\frac{1}{2}$ miles from Partridge Point, and consist of three principal and some lower rocks. The highest is the southwesternmost, about $\frac{1}{2}$ mile long. A shoal lies 150 yards off the north extreme. The smallest is to the north, and is formed of rugged masses of rock.

White Rocks (les Donzelles), W. by S. $\frac{1}{2}$ mile from White Islands, are a low group of islets separated by a channel $1\frac{1}{2}$ miles wide from the main. Sunken rocks lie off the north end.

A Rock, that always breaks, lies 850 yards S. 68° W. (S. 34° W. mag.) from the south end of these rocks, and from it another rock, with a shoal stretching north from it, lies NW. 200 yards distant.

The Coast from Partridge Point to Griguet Harbor is split up into rugged coves, the hills being about 120 feet high, over the coast.

Madeleine Shoal, with 2 feet water, is in the first cove south of Partridge Point, 150 yards off shore. To pass east of it, keep the east point of Kirpon Island in sight east of Partridge Point.

Green Shoal, with 10 feet water, lies S. 22° E. (S. 12° W. mag.) 200 yards from Breaker Point, a low point sheltering two small coves halfway between Partridge Point and Griguet Harbor.

Storm Cape is a rocky islet close to the shore, $\frac{1}{2}$ mile NE. of the entrance to Griguet Harbor, the intermediate coast being steep-to.

Griguet Harbor and several other small anchorages are comprised between Broize Point and White Cape, a little more than 2 miles south, and are formed by a group of islands lying close to the mainland.

Camel Island, the largest, 305 feet high, is the northernmost and forms the south side of the entrance to North and Northwest Bays, and takes its name from a remarkable mound at the east end that forms the summit. The north point is shoal for 200 yards. Several shoals lie off the NE. point, the outer with $5\frac{1}{2}$ fathoms water lying N. 29° E. (N. 63° E. mag.) 300 yards. Prune Island lies north of Camel Island. It is small, 16 feet high, and steep-to, except off the south end.

A Shoal, with 16 feet water, lies between Prune Island and the north point of Camel Island, a little nearer the latter.

Broize Point is bold-to, and forms the east side of North Bay.

Baleine Rock, in the entrance to North Bay, is always uncovered and may be approached to a distance of 100 yards.

Cove Point divides North Bay from Good Cove and is steep-to.

Anchorage may be had in North Bay in 15 to 16 fathoms, off the fishery establishment, with tolerably good holding ground. SE. winds occasionally send in a swell.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls at Griguet Harbor fortnightly during summer and autumn.

Ice.—Griguet is usually the first harbor open on the east coast of the northern peninsula of Newfoundland; it is frozen over, on an average, about the middle of December, and clears about 20th May.

Good Cove (Belle Anse), 400 yards wide and deep, affords good anchorage for small vessels in 11 fathoms, sand.

Bay Point divides Good Cove from Northwest Bay. A rock lies 70 yards east of it, and La Rose, a rock with 2 feet water, is the extreme of a shoal extending from it 100 yards south.

Northwest or Roncière Bay runs in a northwesterly direction one mile from Bay Point, with a mean width of about 600 yards. At 300 yards within Bay Point is Crab Island, close to the east shore, that may be approached as close as 100 yards. At the head the bay runs to the eastward for $\frac{1}{2}$ mile, but is shallow for half that distance. A dangerous spit extends from the head of the bay about 600 yards.

Anchorage may be obtained in this bay in from 10 to 18 fathoms water as convenient, but vessels approaching the head should anchor east of the line joining Bay Point and Crab Island.

Southwest Bay, suitable for small vessels only, lies between Camel Island and the mainland, and affords temporary anchorage at the north entrance, off the north shore of Camel Island, in 9 fathoms water, taking care to avoid the shoal off the north point of that island.

Griguet Island, separated by a channel 100 yards wide from the east side of Camel Island, is small, and about 66 feet high. Off the NE. extreme is Black Islet, 30 feet high, with a small spit off the SW. extreme. The other sides are steep-to.

Four-ears Island, south of Griguet Island, is faced by a peaked black cliff 120 feet high.

Griguet Harbor proper is situated in the space comprised between Camel, Griguet, and Four-ears Islands. It is only 400 yards long and 200 yards wide, and the entrances are narrow and tortuous. The passage between Four-ears and Griguet Islands is

so full of shoals that it should not be attempted without a pilot. Between Griguet and Camel Islands the passage narrows at the south end to 90 yards.

White Cape Harbor (Upper Griguet) is a space 600 yards long and 200 yards broad, between the SW. end of Four-ears Island and White Cape Land. There is no danger in the channel between the islets off the south end of Four-ears Island and those off the north side of White Cape. Boats only can take the passage west of Four-ears Island. Anchorage may be had in 7 fathoms near the mainland shore, to avoid a bank extending 250 yards from Four-ears Island.

Tides.—It is high water, full and change, in these harbors at 7h. 10m.; springs rise 5 feet, neaps rise 2½ feet.

White Cape is a good mark for distinguishing this locality, and is a rugged white cliff, surmounted by a grass-covered summit, 262 feet above high water. The cape is steep-to as well as the outer coast to White Dog Point, the north point of St. Lunaire Bay. Between these two points are two coves, fit for boats only.

(H. O. Chart No. 542.)

St. Lunaire Bay, one of the finest harbors in Newfoundland, is accessible to the largest vessels under any circumstances except perhaps in NW. gales, with which the squalls are very heavy. The entrance is easy to recognize by the aid of White Cape, and when near, St. Lunaire Peak, 335 feet high, on the SW. side of the bay.

Gales from the west usually blow stronger at St. Lunaire than at neighboring ports at the same time, but usually lull at night.

Granchain Island, the extreme of some islands off a peninsula, forms the south entrance point of this bay. It is 85 feet above high water, and the east point formed by an islet joined to it at low water is steep-to.

Flat Rock, always above water, is the extreme of a chain of islets and rocks stretching 800 yards northward from Granchain Island, and is steep-to on the east and north sides.

Salut Island, 65 feet high, a conspicuous conical islet, lies 100 yards south of Flat Rock; and Coal Islet, a square, black cliff, is between Salut and Granchain Islands.

Vanguard Shoal, with 12 feet water, is the eastern shoal off Granchain Island. A small spit extends north from it. Adelaide Island, open north of Flat Rock, leads north of all shoals on the south shore. Adelaide Island is the eastern, and Elizabeth Island the western, of two islets NW. of Flat Rock. A shoal extends 135 yards SE. from Adelaide Island.

Carentonne Island, 72 feet high, lies north of these islets, and off a point of the north shore that slopes from White Hills, 141 feet high. This island divides two coves, the western of which is shallow from the line of Flat Rock touching the south extreme of Carentonne Island.

Amelia Cove, to the eastward, is foul for a distance of 200 yards from the head. The holding ground is bad, and easterly winds bring in a sea, but temporary anchorage may be had in 15 fathoms.

Red Island, 16 feet high, with a shoal close off the SW. extreme, lies east of Carentonne Island.

Strawberry Island lies west of Carentonne Island and the cove west of it, and forms the north point of the entrance to Northwest Bay.

Shoals extend 300 yards south and 200 yards west of it.

North Reef is the outer of the dangers off the north shore of Northwest Bay, being 350 yards off, and may be cleared by keeping the extreme of the cliff on Granchain Island shut in with Nymph Island.

Nymph Island, 92 feet above high water, divides Northwest Bay from St. Lunaire Road. A rocky patch, with $3\frac{1}{2}$ fathoms water, lies south 200 yards from an islet near Nymph Point, the east extreme.

Middle Bank, with 10 feet least water, lies midway between Nymph Island and the rocks north of Granchain Island.

Clearing Marks.—To pass east of this bank, keep the east extreme of Carentonne Island in line with the middle of Adelaide Island bearing S. 3° E. (S. 31° W. mag.). To pass west, keep the west extreme of Red Island touching the east extreme of Adelaide Island N. 21° E. (N. 55° E. mag.). A vessel will be north of it when White Dog Point is shut in with Salut Island S. 87° E. (S. 53° E. mag.), and south of it when the same point is shut in with Coal Islet N. 76° E. (S. 70° E. mag.).

Northwest Bay, entered between Strawberry and Nymph Islands, is $1\frac{1}{2}$ miles deep, and affords excellent anchorage in 21 to 6 fathoms as convenient within that entrance, taking care to clear the shoals off the north shore.

St. Lunaire Road, between Nymph and Granchain Islands and the main, also affords good anchorage in 18 to 21 fathoms, with good holding ground, or off the entrance to Southwest Bay in 13 fathoms.

Southwest Bay, entered from the south extreme of St. Lunaire Road, is about a mile deep, with a shallow cove on the west side and some islets on the east side. The passage is in mid-channel, but the bay is only 200 yards wide, and the head should not be

approached within $\frac{1}{4}$ mile. Vessels may be careened and repaired here in perfect safety.

Ice.—St. Lunaire freezes late in November or early in December, and clears some time during the month of May.

Tides.—It is high water, full and change, in St. Lunaire Bay at 7h. 6m.; springs rise 5 feet, neaps rise $2\frac{1}{2}$ feet.

Tidal Streams.—In the bay the tidal streams are almost insensible, but outside they run north or south, in the direction of the coast, without regularity, at times attaining a velocity of 2 knots an hour, whereas at other times no stream is felt.

(H. O. Chart No. 609.)

Little Bréhat Bay is a small cove 2 miles from St. Lunaire Bay, south of which are Little Needles, some peaked rocks.

Needles Rocks are nearly 3 miles from St. Lunaire Bay, and are curiously shaped, showing well when only a short distance off shore.

Great Bréhat Bay lies $1\frac{1}{4}$ miles SW. of Needles Rocks, and is $\frac{1}{2}$ mile deep within the line of the points. At the head is a small sheltered place for vessels, only 200 yards long and the same distance wide. Between Needles Rocks and Great Bréhat Bay is a small cove called Green Bay, faced by an island, from which shoals extend $\frac{1}{4}$ mile, ending in John Baptist Shoal, with 12 feet water, situated south $\frac{1}{4}$ mile from the south extreme of Green Island.

Foundling Rock, on which the sea breaks continually, is 200 yards NNE. of Bréhat Point, SE. of the bay. These are the only dangers, and by keeping between them the harbor may be entered and anchorage obtained in $2\frac{1}{2}$ fathoms water, with fair holding ground.

Tides.—It is high water, full and change, at Great Bréhat Bay at 7h. 7m.; springs rise 5 feet, neaps rise $2\frac{1}{2}$ feet.

Bréhat Shoal, about 800 yards long and 70 yards wide, is a dangerous bank having over it a least depth of 13 feet water; from it the north point of Great Bréhat Bay bears S. 84° W. (N. 62° W. mag.), distant $2\frac{1}{10}$ miles. A head with 6 fathoms water over it, and steep to around, lies $\frac{1}{4}$ mile South (S. 34° W. mag.) from the 13-foot shoal, and when the sea breaks on it in fine weather the fishermen predict northerly winds; it breaks heavily with NE. winds, and is generally shown by ripples. There is another shoal spot, on which the depth is $6\frac{1}{2}$ fathoms, lying 300 yards N. 4° W. (N. 30° E. mag.) from the 13-foot patch.

To clear these shoals, passing to the westward, keep Camel Island summit over White Cape, bearing N. 3° W. (N. 31° E. mag.); to pass SE., Goose Cape should be kept open south of French Point, S. 42° W. (S. 76° W. mag.).

Tidal Streams.—The streams are variable here, but over the plateau of the shoal they seem to run more rapidly, the eddies indicating there a strength not appreciable a short distance off it.

Cape St. Anthony is one mile SW. of French Point, forming between them French Bay, 800 yards deep, and exposed to the south.

St. Mein Bay extends 3 miles NW. from Cape St. Anthony, and is $1\frac{1}{2}$ miles wide at the entrance between that cape and Fox Point, the west point of the entrance. The water is deep, and the bay completely open to southeasterly winds; on its east side, at $1\frac{1}{2}$ miles from Cape St. Anthony, is a small fishing village.

Ice.—St. Mein Bay freezes toward the latter end of November or early in December, and clears during the month of May.

Fox Point is low, and appears more so from contrast to St. Anthony Hill, 413 feet high, and faced by a black cliff that rises immediately west of it.

St. Anthony Harbor is entered $\frac{1}{2}$ mile north of Fox Point, and can only be distinguished when close-to. It runs in SW. for 550 yards, with a breadth of 335 yards, and then turns NW. $1\frac{2}{3}$ miles, gradually widening. Just within the northern bend, and nearly in mid-channel, are Piquennais Rocks, joined to the south shore by a bank. Neither these rocks nor the north shore are quite steep-to, but the harbor may be entered between, and affords good anchorage in 9 to 6 fathoms, mud. It is often difficult to get a long vessel into this harbor through the boats that anchor off the turning point and the number of fishing vessels that moor there, particularly with winds across the harbor, and the space is narrow for turning a large vessel. The winds are very baffling for a sailing vessel making the entrance, blowing in eddies from the highlands round the harbor.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls here fortnightly during summer and autumn.

Supplies.—Fresh mutton and vegetables, in small quantities, may usually be obtained.

Marguerite Bay, on the north shore of this harbor near the head, is $\frac{1}{2}$ mile deep, but both points of the entrance are shoal, leaving a narrow passage in, at one-third of the distance across from the south shore.

Water is difficult to obtain here, as boats can not get near the mouths of the streams.

Ice.—St. Anthony Harbor freezes late in November or early in December, and clears some time during the month of May.

Tides.—It is high water, full and change, in St. Anthony Harbor at 7h. 10m.; springs rise 5 feet, neaps rise $2\frac{1}{2}$ feet. The tidal streams are scarcely appreciable except in the narrows east of Piquennais Rocks.

Crémaillère Harbor lies 2 miles SW. of Fox Point; the coast between to Savage Point, east of the harbor, is barren and cliffy, while Savage Point is low, with rugged rocks, and is the east extreme of a peninsula, north of which is a snug cove within Anchor Point, the west extreme. Cape Haut-en-bas is the SW. point of the entrance and faced by high black cliffs. Whale Grotto, a deep recess in the cliffs, lies 600 yards within the cape. The harbor is entered SW. of Anchor Point, where it is nearly 400 yards wide between the shoals and thence runs NW. a mile long and $\frac{1}{2}$ mile wide, affording good anchorage in 10 fathoms, mud and sand. Shoals lie off Anchor Point and the opposite shore for 150 yards, and the head should not be approached within $\frac{1}{2}$ mile, to avoid Bear Bank, a shoal with 9 feet water 200 yards off the west shore. Southeast winds bring a sea into the harbor and NW. winds produce heavy squalls under Cape Haut-en-bas, making the entrance difficult, and sometimes impossible for sailing vessels.

Tides.—It is high water, full and change, at Crémaillère Harbor at 7h. 13m.; springs rise $4\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet. Low water occurs about three-quarters of an hour before the time calculated from the establishment.

Notre Dame Island, nearly a mile south of Savage Point, is 85 feet above high water, and flat in appearance.

Notre Dame Shoal, with 12 feet water, lies 575 yards N. 14° W. (N. 20° E. mag.) from the north point of Notre Dame Island.

Henry Island is small, and situated west of Notre Dame Island. Shoals surround it on all sides but the north and west, leaving a deep passage only 150 yards wide between it and Notre Dame Island.

Three Mountains are conspicuous hills, 525 feet above high water, situated SW. of Cape Haut-en-bas and sloping to Vierge Cove. They are an excellent mark for recognizing this locality.

Vierge Cove runs in $\frac{1}{2}$ mile from Vierge Point, which is situated S. by W. $\frac{3}{4}$ mile from Cape Haut-en-bas, but it is quite exposed to seaward.

Angel Point divides this cove from Three Mountain Harbor, is low and narrow, but steep-to.

Three Mountain Harbor is very small, and can contain only fishing vessels, which moor to the rocks. Though exposed, the sea does not fetch home. The tidal streams are scarcely perceptible.

(B. A. Chart No. 1735.)

Goose Cape is a barren peninsula 335 feet above high water, faced by rugged cliffs, that forms the NE. point of Hare Bay, and is separated from Notre Dame Island by a channel 400 yards wide. Lobster Point, the east extreme, is low, and off it about 210 yards

is Lobster Shoal, with 6 feet water. To pass east of this shoal keep St. Anthony Hill open east of Notre Dame Island.

Hare Bay is nearly 5 miles wide at the mouth between Goose Cape and Fichot Islands, and is 18 miles deep east and west, containing several good harbors, but little frequented. The depth of water is great and the sea often very high in the bay, affording no anchorage till within the line of How Harbor and Brent Islands, where 16 fathoms water will be found, but no shelter.

Ice.—The western portion of Hare Bay freezes solid from Brent Islands to How Harbor during the month of December, and the eastern part fills in with northern ice and freezes; the ice generally breaks up early or late in May, according to the season.

Goose Cove is the first harbor NW. of Goose Cape, 2 miles distant, and has an intricate entrance, through which only 4½ fathoms can be carried. It is entered between Seal Point, the west extreme of Goose Cape, and Flat Point, on the main, off which shoals stretch 150 yards.

Coq Island, 20 feet high, lies close off Seal Point, leaving a passage for boats between them, and a shoal extends 33 yards NW. of this island. Cigale Point, on the north side of the entrance, is ¼ mile east of Flat Point, and between them is a cove, with shallow water in it, nearly 400 yards deep. This point is continued by shoal water, just beyond which is La Fourmi (Ant) Rock, that covers at half tide. Within this rock the harbor expands to a space about 550 yards in diameter, where perfect shelter may be had in 5 to 9 fathoms good holding ground.

Directions.—It needs a fresh breeze to take the bends into Goose Cove, and should not be entered unless the vessel is in perfect command. If the shoal off Coq Island is not breaking it would be better to buoy it, and then round it and the island close-to, keeping west of La Fourmi Rock, and then turn in to the anchorage.

Water is abundant, but is difficult to obtain, as the boats can not get close to the mouths of the streams.

Tides.—It is high water, full and change, at Goose Cove at 7h. 13m; springs rise 5 feet, neaps rise 2½ feet. There is no sensible stream in the entrance to the cove, and those outside the entrance appear independent of the tide and follow irregularly the direction of the coast, rarely exceeding a knot an hour, and sometimes not perceptible, but they are always strongest off Goose Cape.

Bouleaux Bay is immediately west of Goose Cove and open to the south. All the north coast of Hare Bay is high and steep, falling in cliffs to the sea, with deep water close-to.

Ireland Bay, a small bend in the land, lies 5 miles west of Goose Cove. Inland NW. of this are Capillaire Mountains, with a remarkable summit, that is conspicuous from the Strait of Belle Isle.

How Harbor, or Bustard Bay (Havre Hodidou, or Baie des Outardes), is the first harbor within Goose Cove, from which it is distant 11 miles. It runs in 2 miles, is $\frac{1}{2}$ mile wide at the entrance, and expands to $\frac{1}{4}$ mile wide near the head. Near the south side of Roland Point, east of the entrance, is Estaing Bank, close to the shore; the east shore of the harbor runs off shoal for about 200 yards. The water shoals from the head a little more than $\frac{1}{2}$ mile.

Ledret Shoal, with 13 feet water over it, lies off the harbor, 1,350 yards S. 8° E. (S. 26° W. mag.) from Fendue Point.

Anchorage may be obtained, in from 8 to 13 fathoms water, as convenient, after the harbor is entered.

Tides.—It is high water, full and change, in How Harbor at 7h. 18m.; springs rise 4 feet, neaps rise $1\frac{1}{2}$ feet.

Northern Arm, 3 miles west of How Harbor, is 2 miles deep and $\frac{1}{2}$ mile wide, but is exposed to southerly winds.

Anchorage.—Good anchorage in a depth of $8\frac{1}{2}$ fathoms will be found about $\frac{1}{4}$ mile off a small river on the eastern shore, with Hare Island seen just open of the mainland, bearing about S. 21° W. (S. 55° W. mag.).

Northwest Arm, separated from Northern Arm by Hare Island, 115 feet high and nearly joined to the mainland at low water, is completely open to the SE., but sheltered anchorage from offshore winds may be obtained in from 5 to 8 fathoms water; a large stream runs into the head. Care should be taken to avoid the bank of bowlders that fringes the whole of the SW. shore of Hare Bay and extends more than $\frac{1}{4}$ mile from the south shore of Northwest Arm.

Brent Islands, two in number, the northern nearly bare and the southern covered with brushwood, are each about one mile in diameter, with only a shallow passage between them and the mainland to the westward; they lie $3\frac{1}{4}$ miles south from How Harbor, and are easy to distinguish. A rocky ledge, awash at high water, extends a short distance from the NE. side of Brent Islands, and shoal water $\frac{1}{2}$ mile from the west side; near the extreme of the shoal is Vert Island.

Anchorage.—West River is SW. of these islands, off which, about one mile SW. of Brent Islands, there is fair anchorage in from 5 to 6 fathoms water, entered southward of Brent Islands.

Shoal.—A shoal, with $2\frac{1}{2}$ fathoms water over it, lies mid-channel between South Brent and Direction Islands in the passage to the anchorage; from it the NE. point of Direction Island is $\frac{1}{4}$ mile S. 58° W. (N. 88° W. mag.).

Long Island separates West and Southern Arms. The island is thickly wooded to the water's edge, except near the north point; the SW. extreme is joined to the mainland at low water.

Beacon.—A wooden tripod beacon stands on the NE. extreme of Long Island.

Ariège Bay, or Southern Arm, also locally known as Belvy Bay, extends nearly 5 miles in a SW. direction from the NE. point of Long Island, between it and a group of islands and rocks fronting South Arm, within which there is no passage. The arm is about $\frac{1}{2}$ mile wide for 3 miles, when it narrows, to expand again into two basins, with good anchorage in from 8 to 10 fathoms water.

A Shoal, over which there is a depth of from 3 to 15 feet, extends 300 yards from the NE. extreme of Long Island, and a depth of 15 feet is found about 200 yards from the east shore of this island, except when nearly midway between the NE. and SW. extremities, where shoal water of that depth extends more than 400 yards from the coast.

Cailloux Island, a small islet lying 400 yards from the SE. shore of Long Island, is low, flat, and covered with grass in the summer season. This island should not be approached within $\frac{1}{2}$ mile on the east side, as shoal water extends from it in that direction.

Directions.—After passing along the southeastern shore of Brent Islands keep in mid-channel; Cailloux Island in line with a low wooded point on the mainland, bearing about S. 35° W. (S. 69° W. mag.), leads eastward of the shoals extending from the east shore of Long Island; this low point is, however, somewhat difficult for a stranger to recognize.

Anchorage.—Anchorage may be had off Long Island in 8 fathoms water, over mud, with the SW. extreme of that island about 1,200 yards N. 29° W. (N. 5° E. mag.).

(B. A. Chart No. 1768.)

Spring Island, 79 feet high, lies nearly 4 miles eastward of Brent Islands.

Beacon.—There is a beacon on the east extreme of Spring Island.

La Source or Spring Inlets consist of three small arms, having shallow water, the west arm extending about $1\frac{1}{2}$ miles from the entrance, situated south of Spring Island; Great Arm, the outer portion, though exposed to northeasterly winds, affords on the east side, about $\frac{1}{2}$ mile from the entrance, fair anchorage with offshore winds in from 6 to 8 fathoms water; it is, however, encumbered with shoals, and vessels should keep rather on the eastern side when entering, as there is a shoal, with $3\frac{1}{2}$ fathoms water over it, in the middle of the entrance.

Tides.—It is high water, full and change, in La Source Inlets at 6h. 57m.; springs rise $4\frac{1}{2}$ feet, neaps rise $1\frac{1}{2}$ feet.

Coast.—Between Spring Inlets and Maiden Point, 2 miles east of it, the coast is bordered by islets and rocks at nearly $\frac{1}{2}$ mile off; Goelands Island, the western of these, lies 800 yards eastward from La Source Point.

Jehenne Shoal, the outer of the dangers, with 9 feet water, lies 700 yards N. 68° E. (S. 78° E. mag.) from summit of Goelands Island. This portion of the coast should not be approached within a mile.

Duchyala Rock.—This rock, having over it a depth of 9 feet, lies N. 29° E. (N. 63° E. mag.) from the summit of Goelands Island, distant nearly $1\frac{1}{2}$ miles. Great caution should be taken to clear this danger in entering harbor.

Maiden Arm (Havre de la Tête de Mort), 2 miles east of Spring Arm and $3\frac{1}{2}$ miles from the east extreme of Fichot Islands, is entered between Maiden Point and Deaths Head Island. Maiden Point, the north point, is a steep slope from a mound 144 feet high, from which east and west the coast is rugged and cliffy. Starboard Island is close east of the southern part of this point, sheltering two boat coves which lie west of it.

Deaths Head Island is a bare rock 56 feet high, steep-to on all sides but the SW., off which a reef extends 300 yards.

Port Island lies SW. of Deaths Head Island, separated from the main by a channel 50 yards wide with 13 feet water. South of the east point is a small islet.

From the east extreme of Port Island the harbor runs up west nearly a mile to Elbow Point, where it branches in two bays, the northern of which is shallow. In the western, at 190 yards from the point, is the best anchorage, in 7 fathoms.

Cow Point, 2 miles southeastward of Maiden Arm, is the turning point of the coast south of Hare Bay, and is rocky, covered with grass, and sloping from a summit 135 feet high close inshore. Between it and Maiden Arm are several coves open to the east, but affording good shelter to boats from offshore winds. Cow Point Shoal, $2\frac{1}{2}$ fathoms, lies close SE. of this point.

Tides.—Northwest of Cow Point the flood runs generally WNW., and the ebb ESE. Northeast of this point the flood runs west, and the ebb in the opposite direction about the Fichot Islands.

Fichot Islands may be easily recognized by their distance from the shore and the summit of Cape Croix, round and elevated 177 feet.

Little Cormorandier, the northern of this group, is small, 95 feet high, cliffy and steep-to except at the north end, from which low rocks extend 225 yards.

Great Cormorandier, 174 feet high and $\frac{1}{2}$ mile long, is the northeastern of the group, and is separated from the south side

of Little Cormorandier by a passage $\frac{1}{4}$ mile wide, in the middle of which is a rock with 10 feet water. Close to the shore near the NE. end are two islets, and Pigeon Island, a small cliffy rock, is separated from the south side by a deep channel 100 yards wide.

Great Cormorandier Rock, with 5 feet water, is $\frac{1}{4}$ mile eastward of Pigeon Island. To pass east of it keep the summit of St. Julien Island open east of Fichot Islands.

Great Verdon Island, south a little more than $\frac{1}{4}$ mile from Great Cormorandier Island, is 121 feet high, about $\frac{1}{4}$ mile in diameter, and steep-to all round.

Little Verdon Island, separated from the south side of Great Verdon Island by a clear channel 265 yards wide, is 73 feet high and also nearly steep-to.

Mélier Islet, a black rock, is in the north part of the passage between Great Verdon and Cormorandier Islands, and is steep-to except on the west side, whence a reef extends 190 yards.

Mélier Rock, with $4\frac{1}{2}$ fathoms, is 150 yards, and Mélier Shoal, with $5\frac{1}{2}$ fathoms, $\frac{1}{4}$ mile from Mélier Islet.

Massacre Islet, $\frac{1}{4}$ mile westward from Mélier Islet, is a bare rock; there is a depth of $3\frac{1}{2}$ fathoms about 700 yards from its east side.

Monk Islet, $\frac{1}{4}$ mile from Massacre Islet, is a bare rock lighter in color than Massacre Islet, and steep-to. East of the line joining these islets and between them are the following dangers:

Massacre Rock, with 5 feet water over it, lies 300 yards from Massacre Islet. Monk Rock, awash at low water, lies 900 yards from Monk Islet. Little Monk Rock, on which the depth is 13 feet, lies 200 yards from Monk Rock. Ship Shoal, with $4\frac{1}{2}$ fathoms water over it, lies 1,200 yards west; and Corlet Shoal, on which the depth is $6\frac{1}{2}$ fathoms, 600 yards north from Monk Island.

Northeast Island.—The northern part, named Le Câlas, has shoal water extending from it 150 yards, leaving only a narrow passage with deep water between it and Little Verdon Island. The east shore is bold-to, and the south end falls abruptly from Cape Croix, a remarkable round hill 177 feet above high water.

Beacon.—The summit of Northeast Island is dome-shaped, and surmounted by a beacon.

Fichot Island, the largest of the group, is steep-to on the west side, over which the summit rises 194 feet above high water.

Fichot Harbor, lying between Fichot and Northeast Islands, is entered by two passages, that from the north, between Watering Cove Point and Frommy Island, and the southern, named Flago Pass, with 8 feet in it at low water. This harbor, available for small vessels only, should not be attempted without a pilot, as the

channel is narrow, the turns are sharp, and anchorage space small. There is a flagstaff on each entrance point.

Tides.—It is high water, full and change, at Fichot Harbor at 6h. 58m.; springs rise 4 feet.

Madame Island is the eastern of a group of islands nearly joined to each other and the mainland at low water, forming the west side of Fichot Channel, which is about $\frac{1}{2}$ mile wide.

Répissé Rock, with 3 feet water on it, lies 400 yards north of Madame Island, and is the extreme of a ledge, part of which uncovers, extending from Madame Island $\frac{1}{2}$ mile.

Four Harbor, $\frac{1}{2}$ mile south of Cow Point, is suitable only for small vessels, that can anchor in a space 300 yards long and 200 yards broad in 5 to 6 fathoms water, or moor close to the shore in an arm, 100 yards wide, extending to the westward. The entrance points are 200 yards apart, but the clear channel in is only 100 yards wide between the shoals off the points.

Tides.—It is high water, full and change, at Four Harbor at 7h. 5m.; springs rise 4 feet.

Virgin Bay, south of Four Harbor, is divided by a peninsula from Little Islets Harbor, off which shoals extend a short distance.

Virgin Shoal, with 7 feet water on it, lies 300 yards off the entrance to Four Harbor, and is steep to on the north side. The SW. hill on Fichot Island open east of Madame Island, bearing S. 63° E. (S. 30° E. mag.), leads east of this shoal.

Little Islets Harbor, SW. of Madame Island, is formed between English Island and the peninsula south of Virgin Bay.

In the entrance is Little Madame Island, on the NW. side of which is the only passage in, clear in mid-channel and 50 yards wide. The harbor, only suited for small vessels, is 300 yards long and 200 yards wide, with anchorage in 13 feet water between the two northeastern fishing stages on the west side. There is a flagstaff on the north point of the entrance.

Fichot Channel is narrowed by Mid-channel Rock, awash and always breaking, which lies 650 yards N. 74° W. (N. 41° W. mag.) from the south point of Fichot Island; there is a good passage on either side, that nearest Fichot Island being the wider.

Bruyantes Rock, awash and nearly always breaking, lies 300 yards east from English Island and 400 yards from Mid-channel Rock.

Louis Lemaire Shoal, with 6 feet water over it, lies 200 yards off the SE. extreme of English Island.

To pass between Mid-channel Rock and Fichot Island, keep Massacre Islet its own breadth open west of Fichot Island, bearing N. 9° E. (N. 42° E. mag.).

Chasseurs Island, south of English Island, is separated by a narrow channel 200 yards wide, with from 6 to 8 fathoms water in the middle. A rock lies between this island and the south point of English Island; from it the north point of Chasseurs Island is 200 yards S. 78° W. (N. 69° W. mag.).

Gros-plomb Islet lies close SW. of Chasseurs Island. Double Island, formed of two hills nearly joined at the base, is 700 yards SW. of Chasseurs Island.

Sournoise Shoal, with 13 feet water over it, lies 665 yards SE. of Chasseurs Island. The east side of Madame Island, open east of English Island, bearing North (N. 33° E. mag.), leads east of this shoal.

Great Islets Harbor may easily be recognized by the peaks of Great Buse, 531 feet, and Little Buse, 384 feet above high water, on the south side of the harbor. The entrance south of Double Island is 800 yards wide to Jehenne Point, bare and steep, sloping from the Buse Hills. The harbor runs in northwesterly a little more than a mile to River Point, where it turns sharp to the SW. in an arm 190 yards wide navigable for $\frac{1}{4}$ mile. Chabert Island is nearly joined to the north shore, NW. $\frac{1}{4}$ mile from Double Island, and shelters the usual anchorage NW. of it in 12 fathoms, mud. North of River Point is an island joined to the main at low water, SW. of a shallow cove. Off the south shore are two small islets. The shores of the harbor are nearly steep-to, and there is no danger in proceeding to the anchorage NW. of Chabert Island, or that available for small vessels in 3 $\frac{1}{2}$ fathoms west of River Point. On Grelins Point, south of a little cove on the west shore of this anchorage, a small vessel may be careened and repaired.

Tides.—It is high water, full and change, at 7h. 22m; springs rise 5 feet.

(B. A. Chart No. 1734.)

Enragée Point is situated 1 $\frac{1}{2}$ miles S. by E. of Jehenne Point. The coast between is high, indented by several deep, open coves, and is steep-to, but a short distance to the eastward are some deep banks on which boats fish. The coast then trends SSW. $\frac{1}{4}$ W. 1 $\frac{1}{2}$ miles nearly, to Great Goose Harbor.

Goose Island, one mile from Enragée Point, is cliffy in parts, barren, and lighter in color than the near coast.

Great Goose Harbor, SW. of Goose Island, is only available for vessels drawing less than 10 feet water, and the holding ground is bad.

Baleine Rock, 5 feet above high water, lies SE. of Goose Island, and is continued SSW. 200 yards by a ledge, on which there is only 3 feet least water.

Little St. Julien Harbor is 850 yards long and 150 yards wide at the entrance, narrowing gradually to the head, and exposed to NNE., but Baleine Rock and the narrow entrance shelter the fishing vessels, which moor head and stern in 5 fathoms, good holding ground, abreast a gap in the cliffs on the east shore, $\frac{1}{4}$ mile within the entrance. Little St. Julien Point is black, with rugged cliffs and steep-to.

Great St. Julien Harbor lies east of this point, and is 400 yards wide at the entrance, between Little St. Julien and Jeanne Points. Jeanne Point is a bluff cliff and steep-to. The harbor runs $\frac{1}{4}$ mile SW. by S., narrowing to 200 yards between Aurora Point and a steep slope on the east shore, from which it extends $\frac{1}{2}$ mile, narrowed by shoals stretching 100 yards from the east shore.

A shoal lies 100 yards from the west shore, nearly midway between Aurora Point and the fishing stage nearest to it.

This harbor is fit for small vessels only, which may find temporary anchorage in 5 fathoms just SW. of the east stage on the north shore. Fishing vessels moor head and stern in perfect security, though NE. winds bring a little sea into the harbor.

St. Julien Island is barren and makes in two summits, the higher, near the NE. end, is 220 feet above high water. From the NW. shore, under the summit, is Northwest Shoal, extending 150 yards, and the south end is continued by islets and rocks, leaving a clear channel only 135 yards wide between them and the south spur of Jeanne Point.

Souris Rock, awash at low water, lies 100 yards SE., and Souriceau Rock, with 3 feet water, 100 yards SW. of the south islet. St. Julien Island is a good landmark and stands out prominently from the line of the coast.

Mulou Shoal, with $3\frac{1}{2}$ fathoms water, is 270 yards NE. of the NE. point of St. Julien Island, and breaks in bad weather.

Jeanne Channel is passable ordinarily for vessels drawing less than 13 feet water, by keeping near the main until abreast the islets and then mid-channel. Those of deeper draft should buoy the passage before taking it. This passage is made more difficult from the strong tides that set through it, flood stream running NW. and the ebb SE., following regularly the rise and fall.

The Coast from St. Julien Island to Croc Harbor, SSW. nearly 5 miles, is bold-to. At $\frac{1}{4}$ mile south of Jeanne Channel is Black or Irish Islet, a barren rock steep-to. Flamands Cove, completely exposed, is SW. of Black Islet, south of which is St. Julien Peak, 279 feet high, sloping steeply to the coast, and resembling the summit of Windy Point. From this to Croc Harbor the coast is clear. Corbeau Islet and Petit Rocher lie close to the shore, the latter near the north point of the entrance of Croc Harbor.

(H. O. Chart No. 562.)

Croc Harbor, between Groux Point on the north and Windy or Barren Point on the south side, is 1,200 yards wide. Coming from northeastward it is advisable to take a departure from the north end of Groais Islands, as the entrance is not easily distinguished on that bearing.

From the entrance the harbor runs in a general NW. direction $1\frac{1}{2}$ miles, when it divides in two arms, Le Fond, extending north, and Epine Cadoret, running SW. to Freshwater Creek at the head. West of Windy Point, Irish Bay extends nearly a mile. Abreast the north point of this bay the harbor is $\frac{1}{2}$ mile wide, but gradually narrows, except in the basin at the junction of the two arms. This harbor is the headquarters of the French squadron.

Groux Bay.—From Groux Point the coast curves to Groux Bay, 375 yards deep, containing shelter only for boats, with shallow water 150 yards from the north shore. From Bonhomme Point, the west point of Groux Bay, the coast is steep-to, except in Fisherman Cove, 600 yards west, that is fit for boats only within the line of the points. There is a fishing establishment in this cove. Genille Point, west of this cove, forms an elbow in the bay, sloping from Genille Peak, 213 feet high, whence the shores are bold-to near the head of Le Fond.

Observation Point, the south point of the entrance to Epine Cadoret, is bold-to. About $\frac{1}{2}$ mile within, on the west side, is Cemetery Point, on which stands a large white cross. Just beyond the first elbow in this arm is Careening Point, where several vessels have been hove down. From Observation Point to Blanche Point, north of Irish Bay, the coast makes in small coves, the points of which should not be approached within 100 yards.

Irish Bay is nearly $\frac{1}{2}$ mile wide between Blanche and Windy Points. The south shore is foul from $\frac{1}{2}$ mile SW. of Windy Point to the head. Le Muloux, a rock awash, lies 350 yards off shore. La Baleine or Folle Rock, 3 feet above high water, lies off the west shore, leaving a narrow passage between it and the main. This bay is completely exposed to the northward, and offers shelter for small vessels only behind an islet off the fishing establishment at the head of the bay.

Windy Point slopes from a barren hill 404 feet high, with whitish rugged slopes. This point is not easy to distinguish from the northeastward, though prominent from other directions.

Observatory Islet, low and steep-to, lies close SE. of this point, leaving a narrow passage between it and the shore.

Beacon.—There is a beacon on the summit of Windy Point.

Anchorage may be obtained anywhere within Genille Point. Vessels of war usually anchor off Observation Point in 15 fathoms water, and moor for prevailing winds at NW. When these winds are violent, squalls come alternately from Epine Cadoret and Le Fond with great force, straining the cables with heavy jerks. Merchant vessels moor, in from 16 to 19 fathoms water, between Genille and Observation Points, where a little sea heaves in with SE. winds, but they feel the squalls less from NW. winds.

The anchorage abreast the watering place in Le Fond is insecure during SW. winds.

Water.—Water and wood may be obtained easily.

Ice.—Croc Harbor freezes solid in December and breaks up early or late in May, according to the season.

Tides.—It is high water, full and change, at Croc Harbor at 7h. 4m.; springs rise $4\frac{1}{2}$ feet. The streams are sufficiently strong to keep a vessel tide-rod in light breezes.

(H. O. Chart No. 924.)

Gray Islands is the name by which the two islands, Groais and Bell, SE. of Croc Harbor, are locally known.

Groais Island, 7 miles SE. by E. of Windy Point, is high and clifty, nearly flat in outline, and can be seen 40 to 50 miles. It is 7 miles long and 3 miles wide, is shaped like a triangle, with the apex south, and is thickly wooded.

Islets and rocks extend from the west point, which should not be approached within a mile.

The Sisters, two steep rocks, lie off the NE. point, and the rest of the coast is so straight and steep that there is no place of shelter even for boats, and few where one could be hauled on shore.

Bell Island (Belle Île du Petit Nord) is separated from the south part of Groais Island by a clear channel $5\frac{1}{2}$ miles wide. It is $8\frac{1}{2}$ miles long and about 6 miles wide, is flat, high, and steep on the coast, except on the shores of a bay on the SW. side, and steep to on north and south sides. Northeast Rock (Île à Herpin), $\frac{1}{2}$ mile from the NE. point, is a barren islet, with several rocks between it and the shore.

L'Épervier, a rock with 10 feet water, on which a vessel of that name struck in 1849, is NE. a little more than $\frac{1}{2}$ mile from Northeast Rock.

Green Island lies near the coast of Bell Island, a mile to the northward of the SW. point. A rock, with 2 feet water on it, lies 900 yards west from this island. To pass west of it, keep Groais Island open north of Bell Island.

Boulonnaise Rock, part of which uncovers at low water, lies $\frac{1}{2}$ mile S. 29° E. (S. 3° W. mag.) from Billard Point, and at $\frac{1}{2}$ mile

S. 58° W. (West mag.) from the same point is a rock with 7 feet water over it.

Rocky Bay, on the SW. coast, is the only place where small vessels and boats may find shelter, behind a cluster of rocks and islets.

Red Islet or South Rock is the southern of these, lying nearly 2 miles off shore.

Canes Island, the largest and northern of the group, is low, with a round hillock covered with grass in the summer. It is surrounded by rocks, the two extremes of which are Bara Rock, with 10 feet, $\frac{1}{4}$ mile WSW. from the SW. extreme, and a rock, with 5 feet water, 800 yards west from the center of Canes Island.

A ledge, with $3\frac{1}{2}$ fathoms water, extends 1,600 yards SW. from Canes Island. Large vessels must avoid this, as there may be shoaler water.

Anchorage may be had in Rocky Bay in 2 to $2\frac{1}{2}$ fathoms, sand, passing at a sufficient distance west of Canes Island to avoid the dangers spoken of.

Southwest Harbor.—The French vessels fishing off Bell Island moor for the summer inside a group of rocks that forms the north point of the entrance to Rocky Bay. To take up a position needs fine weather and a pilot, or long experience of the place.

The coast of the main from Windy Point runs high and steep SW. 2 miles to Million Cove, open to the eastward, where there is a fishing settlement, with indifferent shelter even for boats.

Pilier Cove, 3 miles from Million Cove, is formed by the main and the north part of Cape Rouge Peninsula. It is completely open to the eastward, and bad for anchorage; at the head is a fishing post.

Cape Rouge is the south extreme of Cape Rouge Peninsula, $2\frac{1}{2}$ miles long and $1\frac{1}{2}$ miles broad, culminating in a peak over Cape Rouge 492 feet high. Pyramid Point, the NE. extreme, is a pyramidal rock, close SE. of which is a low reef, separated by a narrow boat passage. A short distance west of this point, in Pilier Cove, is a natural excavation, supported by a pillar, from which the cove derives its name. Truite Point, the SW. extreme, is the north point of the entrance to Cape Rouge Harbor. Immediately north of it is the settlement, and the coast runs north nearly 2 miles from it to the isthmus, 850 yards across.

Conche Peninsula is south of Cape Rouge Peninsula, Frauderresse Point, at the NE. extreme, being distant 1,400 yards from Truite Point. It is $3\frac{1}{4}$ miles long, $\frac{1}{4}$ mile wide at the extremes, and a mile wide at the isthmus, which is 350 yards across. Frauderresse Point is fringed by rugged, curiously shaped rocks. Off it a bank extends 300 yards, and shoal water lies off the north shore of this

peninsula west of the point, extending nearly $\frac{1}{4}$ mile from a white cross on Dos-de-cheval Point.

Off Cape Fox, the south extreme of the peninsula, islets and rocks extend 200 yards, but with these exceptions the peninsula is steep-to.

(H. O. Chart No. 562.)

Cape Rouge Harbor is formed by these peninsulas and the main, and is divided into Biche Arm to the north, and Southwest Bay. The mainland coast is steep-to and nearly straight. A small bend in it, opposite the entrance of the harbor, is Priests Cove.

Biche Arm contains perfectly secure anchorage, easy of access with any wind. The best anchorage is in 15 fathoms off a remarkable cascade on the west shore, WNW. of Partridge Point, low and grassy, the bottom mud, good holding ground.

Souris or Champ-paga Shoal, the only isolated danger in Southwest Bay, is the summit of a bank of rock 350 yards long and 250 yards broad, in the middle of which is 6 feet water. To pass west of this shoal keep Cod-pile (a little peaked rise on the hills north of Conche Harbor) in line with the NW. fishing stage; to pass north keep the north point of Bell Island well open east of Frauderesse Point; and to pass south keep the north point of Rogue Island in line with Frauderesse Point.

To anchor in Southwest Bay the above leading marks must be attended to, and a good berth given to the rocks off Dos-de-cheval Point.

Caution.—Beacons.—The two beacons at the head of the bay, when in line, lead over Souris Shoal, as also do the beacons on Dos-de-cheval Point. (One beacon down in 1896.)

Anchorage may be obtained in from 12 to 16 fathoms water, over gravel and a little mud near the head, but the holding ground is only fair. Vessels with good tackling hold on well through the heavy squalls that come with NW. and west winds and the little sea brought in by easterly winds.

Ice.—Cape Rouge Harbor fills with northern ice and freezes, the ice breaking up some time during the month of May, depending on the seasons.

Tides.—It is high water, full and change, at Cape Rouge Harbor at 7h. (approximate); springs rise 6 feet, neaps rise 4 feet.

(H. O. Chart No. 924.)

Rouge Island, 800 yards long, 350 yards wide, and steep-to, lies $3\frac{1}{4}$ miles east from Frauderesse Point, and is composed of red rock covered with grass at the summit.

Conche Harbor, between the peninsula and the main, is west of the isthmus, and runs up $2\frac{1}{4}$ miles from Cape Fox, being $1\frac{1}{2}$ miles

wide at the entrance, diminishing gradually to the head. The fishing establishments are on the peninsula, $1\frac{1}{4}$ miles from Cape Fox, off which the fishing vessels moor, head and stern.

Martinique Cove, at the head of the bay, is exposed to winds from S. by E. to SW.; the holding ground is reported fair, and vessels manage to hold on there all the fishing season.

Anchorage.—There is anchorage in 10 to 14 fathoms off Martinique Cove. SW. winds are the most dangerous and blow with great violence. There is good anchorage off the western village, on the north side of the harbor, in from 7 to 12 fathoms. Good anchorage can also be found in 6 fathoms, mud, off the center of Silver Cove, on the east side of the harbor, about $1\frac{1}{4}$ miles north of Cape Fox. During the season the coast from Silver Cove to Cape Fox is obstructed by nets.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls here fortnightly during summer and autumn.

Supplies.—Fresh mutton and vegetables can usually be obtained. The population of Silver City, the village around the cove, is about 250.

Ice.—Conche Harbor fills in with northern ice and freezes, the ice breaking up early or late in May, according to the season. In 1894 heavy pans of ice were found in Silver Cove on the 28th June, almost entirely blocking up the small anchorage.

La Vache-gare, a large pale-yellow patch on the coast, bears S. 76° W. (N. 72° W. mag.), distant 3 miles from Cape Fox, and Vache-gare Cove, a slight indentation in the coast, lies close north of it.

(H. O. Chart No. 794.)

Hilliers Harbor (Havre de Boutitou) is difficult to recognize from the north, but there are three parallel gaps in the cliffs that resemble a ship under sail close to the coast, the southern of which forms the point of entrance to the harbor, and is $7\frac{1}{4}$ miles SW. of Cape Fox. The harbor is very small, is open to SE., and divided into two little coves at the head, the eastern of which alone affords shelter to three or four vessels in 6 fathoms, moored head and stern, along the south shore of the cove. Dolo Point is the west turning point on the shore south of this cove.

Boutitou Shoal, with 7 feet water, lies $\frac{1}{4}$ mile south of the harbor and 400 yards off the coast.

Tides.—It is high water, full and change, at Hilliers Harbor at 7h. 2m.

The Coast from Hilliers Harbor to Canada Bay is high and steep, with some rocks awash quite close to the coast.

Canada Bay (Baie des Canaries), 5 miles SW. of Hilliers Harbor, is entered between Cape Daumalen on the north and Canada

Head on the south, a width of $1\frac{1}{2}$ miles. It expands within the entrance, Bide and Chimney Arms running northward, and Gouffre and Canada Harbors on the south shore.

Grévigneux (Englée) Island lies close to the NW. side of Cape Daumalen. It is tolerably high and partly wooded; the outer sides are steep, particularly the west shore; and White Point, the south extreme, is so called from the remarkably white color of the rocks.

Aiguillettes Island is joined to the SE. extreme of Grévigneux Island by a bank of sand, is wooded and steep, and divided by a narrow channel from Cape Daumalen.

Aiguillettes Harbor, between Aiguillettes Island and Cape Daumalen, is fit for small vessels only, being encumbered by small islets. A small boat channel leads to Grévigneux Harbor.

Aiguillettes Rock, with 13 feet water, lies nearly $\frac{1}{2}$ mile off the entrance to Aiguillettes Harbor. The water is deep round this shoal, that occupies a small space only, and the sea breaks on it with strong westerly winds. To pass SW. of it, keep a cascade on the west shore of the bay open of White Point.

Grévigneux Harbor is north of the island of that name, and can only hold one moderate-sized vessel when it is clear of fishing craft.

Supplies.—A small supply of provisions may be obtained here.

Bide Arm, entered immediately north of Grévigneux Island, runs in a straight line N. by E. 5 miles, with an average breadth of 600 yards. The east shore is high and wooded; the west is wooded, but not so high. The arm affords the best anchorage in Canada Bay in case of bad weather.

Hermit Rock, with 6 feet water, lies 200 yards off the east coast of this arm, and N. by E. 600 yards from Grévigneux Island.

Bide Shoal stretches from the west shore nearly a third of the distance across the arm, 600 yards north of a cove situated 3 miles within the entrance. There is 4 feet least water on this shoal. Off the north point of the cove a shoal extends a short distance.

The Watchers, rocks awash, lie 200 yards off the west coast of this arm, a little within Lard Point, that forms the west side of the entrance, and the Turtles lie between Lard and Milan Points, the latter the second prominent point on the west side, within the entrance.

Anchorage.—Vessels must proceed at least 2 miles within Lard Point to find an anchorage, but greater security may be found by anchoring 3 miles within the entrance, in from 9 to 13 fathoms water, in the middle of the arm, or proceeding beyond Bide Shoal, by keeping one-third of the distance across from the east shore. Perfect sheltered anchorage may be found in the basin at the head

in 11 fathoms water, but vessels must not swing within 200 yards of the shore.

The Promontory that separates Chimney Bay from Bide Arm is moderately high. The south extreme is called Lard Point, from which the coast curves northwestward in Lard Cove, and thence to Marten Point, the east point of the entrance to Chimney Bay, that is white in color and forms the west side of a creek with several huts on the shores. This coast is rugged and fringed by rocks.

White Islet lies SW. by W. 800 yards from Lard Point, and is conspicuous from its color. Flat Islet lies 200 yards NE. of White Islet.

There is a good passage between these islets and Lard Point, and a channel between them for vessels of moderate draft.

Herring Shoal, with 2½ fathoms water, lies 400 yards S. 17° W. (S. 49° W. mag.) from White Islet.

Cod Rock, with 12 feet water, lies 800 yards S. 4° W. (S. 36° W. mag.) from White Islet.

To pass south of these, keep Milan Point open east of Lard Point, bearing N. 19° E. (N. 51° E. mag.), and to pass west of them keep the southern summit of the Chimnies or Cloud Hills open west of Green Islet, on the west shore of Chimney Bay, bearing N. 26° W. (N. 6° E. mag.).

Wolf Shoal, with 3 feet water, is ¼ mile S. 14° E. (S. 18° W. mag.) from Marten Point, and 600 yards from the shore. Some banks with 3½ and 4½ fathoms extend ¼ mile NW. from this shoal. There is a good passage between them and the near land. To pass west of these banks keep White Point a little open south of White Islet, bearing S. 38° E. (S. 6° E. mag.).

Clark Rock, upon which there is a depth of 19 feet, lies in the fairway to Chimney Bay, with the center of White Islet bearing West (N. 58° W. mag.), distant one mile. Green Island shut in by Fly Point, bearing North (N. 32° E. mag.), leads west of the rock.

Chimney Bay extends 8 miles north from Marten Point, where it is 1,700 yards wide. At the head Northeast Brook and Beaver Cove continue it to the north and Castor Cove to the SW., navigable for a mile, and thence NW. in a shallow arm, 5½ miles.

Marten Rock, awash at low water, is ¼ mile off Marten Point and 300 yards from shore. To pass south of it keep the north point of Grévineux Island touching Lard Point, bearing S. 50° E. (S. 18° E. mag.).

Cabin Point is on the east shore, 2½ miles within Marten Point. It is low and should not be approached close-to. A reef is reported to extend from Chainé Point, 3½ miles north of Cabin Point.

Zephyr Rock, with 2 feet water on it and steep-to, lies in the middle of Northeast Brook Cove.

Anchorage.—When approaching the anchorage at the head of Chimney Bay, Weymouth Point should be given a berth of 800 yards, to avoid shoal water extending 600 yards from it. The bottom is uneven, and in some places hard, but H. M. corvette *Tenedos* (1885) found good anchorage in 12 fathoms water, over soft black mud, between Drummond Island and Tenedos Rock.

Beacon.—There is a beacon on Weymouth Point.

Tenedos Rock, with a depth of 10 feet over it, lies with the south extreme of Drummond Island 1,050 yards N. 73° W. (N. 41° W. mag.).

Castor Cove is clear of danger, and near it wood can be obtained. This cove affords good sheltered anchorage in from 11 to 16 fathoms water, or in the west cove opposite, named Beaver Cove, in from 8 to 10 fathoms. Salmon are plentiful in Beaver Brook, about 2 miles NNE. of Beaver Cove.

Anchorage.—H. M. S. *Emerald* (1890) anchored in the center of Beaver Cove in 16 fathoms water, over mud, and found the shores of the cove to be free from outlying dangers. In entering this anchorage the mark used to lead between Tenedos Rock and the shoal off Weymouth Point, in not less than 6 fathoms water, was the NE. point of Fane Island just shut in with the SW. point of Drummond Island, bearing N. 44° W. (N. 12° W. mag.).

Grosse Point, opposite Cabin Point, is the east point of Chimney Cove, a little bay open to the southward.

Anchorage.—There is good anchorage in 18 fathoms water, over mud, south of Grosse Point. Before letting go the anchor, it is necessary to determine the nature of the bottom, as it is not all mud. — H. M. sloop *Fantome* rode out a fresh southerly gale here in 1885.

Bad Rock, small and always above water, lies 400 yards N. 67° E. (S. 81° E. mag.) from Good Point; there is some foul ground to the eastward of the rock.

Otter Cove, on the west shore opposite Marten Point, has shoal water fringing the shore for some distance.

Anchorage.—Anchorage may be obtained in the middle of this cove in 8 fathoms water, over sand and mud. H. M. S. *Forward* (1888) found good anchorage in Otter Cove, in 7 fathoms water, with the Island off Dieppe Point, in line with a whitewashed rock on the east shore of Canada Bay, bearing about N. 84° E. (S. 64° E. mag.).

The Chimnies or Cloud Hills are remarkable mountains, with rugged summits from 909 to 1,122 feet high, lying 1½ miles inland from Grosse Point, and can be seen a great distance when SE. of the entrance to Canada Bay.

Torrent Cove or Hells Mouth is $1\frac{1}{2}$ miles south of Otter Cove, and is so named from a cascade falling over high land at the head.

A rock that covers lies $\frac{1}{2}$ mile N. 11° E. (N. 43° E. mag.) from Torrent Cove and 190 yards from the shore.

Gouffre Harbor (Wild Cove) is $2\frac{1}{2}$ miles south of Torrent Cove, and extends south $\frac{1}{2}$ mile; it is 1,200 yards wide at the entrance, diminishing gradually to the head, and is entered between Gouffre Islet, 100 yards off the west shore, and Gouffre Point to the eastward. The islet is a small rocky mound, nearly steep-to on the south side, but difficult to distinguish when under the land. The point is long and low, surrounded by rocks and shoals, that should have a good berth in turning in or out of the harbor. This harbor is much frequented, and affords good shelter south of Gouffre Islet, with Cape Daumalen shut in with Gouffre Point in 13 fathoms, hard bottom but fair holding ground. Fishing vessels that remain moor head and stern, and though exposed to northerly winds are secure.

Water may be easily obtained on the west side of the harbor, and another stream discharges into the head, but a fringe of bowlders renders it inaccessible to boats.

Canaries (Canada) Harbor, $1\frac{1}{2}$ miles SE. of Gouffre Point, is entered between Calvary Point and Canada Head.

Calvary Point is faced by white rocky cliffs, the extremes of a round hill, 128 feet high, surmounted by a cross. Canada Head is bold, cliffy, and steep-to. In this harbor are the principal fishery establishments of the bay, and there is a sufficient depth for mooring vessels, but the holding ground is bad, and the harbor is completely exposed to northeasterly winds that bring in a heavy sea.

Ice.—Canada Bay freezes solid during the month of December, and breaks up early or late in May, according to the season.

Tides.—It is high water, full and change, at Bide Arm at 6h. 37m., and at Gouffre Harbor at 6h. 46m.; springs rise $5\frac{1}{2}$ feet, neaps rise $1\frac{1}{2}$ feet.

(H. O. Chart No. 924.)

Coast.—The coast from Canada Head $2\frac{1}{2}$ miles in a south direction to Cape Goboso continues high and bold-to; halfway between these points is Riencé Creek, where there is a fishing station, but with little protection even for boats. The coast for $1\frac{1}{2}$ miles continues high from Cape Goboso in a southerly direction to Dégrat de Cheval, locally known as Cat Cove, a small cove with a fishing station and shelter for boats. The land is barren and of a red color except Green Cape, a high peaked woody hill over the coast one mile west of Dégrat de Cheval.

Hooping Harbor (Havre Sans-fond), 7 miles from Canada Bay, is nearly $\frac{1}{2}$ mile wide at the entrance between Duck Bill

Point, a high, barren, reddish mound, sloping in an inclined point on the east, and a high, dull red, cliffy point on the west. Within the entrance the harbor divides into East Arm, $\frac{1}{2}$ mile, and North Arm, 2 miles deep. The shores are wooded and very high, except at the head of East Arm, where there is flat land and a good stream near the fishing establishments.

Anchorage.—The anchorage is off these, exposed to southerly winds, but the holding ground is good. Large vessels should let go in 16 fathoms, but small vessels can moor near the shore in 6 fathoms water. It is exposed to squalls from the North Arm, and should be used only as a temporary anchorage. The anchorage near the head of the North Arm is perfectly sheltered, but the water is deep, 16 to 21 fathoms being found close to the head. Vessels should anchor off a sandy cove on the west coast, into which a streamlet falls, and moor well against squalls from north to west. It is often impossible to beat into this harbor when those winds prevail.

Little Hooping Harbor (Petit Sans-fond), at $1\frac{1}{2}$ miles SW. of Hooping Harbor, is an open cove with a large cascade at the head and a fine birch wood in the surrounding valley. There is no shelter except from easterly winds.

Cape d'Argent, 3 miles south of Little Hooping Harbor, is a high cliffy projection, whiter in color than the surrounding coast.

Fourché Harbor (Baie de Fourchette) is entered between two high reddish cliff points, $1\frac{1}{2}$ miles SW. of Cape d'Argent, and is $\frac{1}{2}$ mile wide at the entrance, whence it trends west $3\frac{1}{2}$ miles, with an average breadth for 2 miles of nearly a mile. On the north shore is a little cove where small vessels can moor head and stern in 16 fathoms, or in a narrow arm west of the cove in 16 to 21 fathoms. The water is too deep for anchorage in the rest of the harbor. The entrance must be taken with a fair wind, as the squalls from westerly winds sweep in all directions from the high surrounding land.

The Coast trends SSW. $\frac{1}{2}$ W. from Fourché Harbor, and consists of high rugged land, red in color.

Robineau Coves lie 2 and 3 miles respectively from Fourché Harbor and afford no shelter. North of the northern cove is a high peaked cliff that may be distinguished from some distance. From these coves the land becomes barren and gray for a mile to a small cove, the south point of which is a remarkable cliff. From that point the coast is much lower to Little Orange Bay, an open cove, whence the coast is of moderate height and wooded to the sea.

Orange Bay, also known as Great Harbor Deep, a little more than 10 miles SSW. from Fourché Harbor, extends 2 miles in a NW. direction and then forms two branches, Soufflets Arm, and Pigeonnière Arm, the head of which latter is named Sault Cove.

Cat Cove lies just within the north point of the entrance, and contains a fishing establishment but no shelter.

Jacques Cove lies on the south shore a mile within the entrance and contains a fishing post, but in successive years the vessels were lost that moored there, and it is no longer used as an anchorage.

Soufflets Arm.—Soufflets Arm extends in a north direction for $1\frac{1}{2}$ miles; the direction then turns abruptly round Rade Point, on the western shore, to the west for rather more than a mile to the head. Rather more than $\frac{1}{2}$ mile from Rade Point the arm is narrowed to the breadth of 200 yards between Observatory Point on the north and a point on the opposite side; the navigable channel, having $3\frac{1}{2}$ fathoms water, is here barely 100 yards wide, and a spit, drying at low water, extends in a westerly direction from Observatory Point for about 300 yards.

In entering hug the south shore closely, when the channel will open into a basin, about 300 yards in diameter, having depths of from $5\frac{1}{2}$ to 7 fathoms.

H. M. gun-vessel *Griffon* anchored off the point, before going through the narrow channel, in 6 fathoms water, good holding ground, but had not sufficient swinging room; H. M. S. *Forward* (1888), anchoring more to the SE., in 18 to 20 fathoms water, over mud, found ample swinging room.

Sault Cove, at the head of Pigeonnière Arm, is entered between Pigeon and Plate Points. About 300 yards NW. of Pigeon Point, Emeraude Shoal, with 3 feet water over it, extends off the NE. side of the entrance for 200 yards, the channel lying to the west, between it and Plate Point, being about 200 yards in width. Rocks border the shore immediately NW. of Plate Point, and the anchorage, in 10 fathoms water, is about 600 yards within the entrance.

Union Cove (Petites Vaches), 7 miles southward from Orange Bay, is entered between Devil Point on the north side, and on the south a peninsula, lower than the rest of the coast, with a little green at the summit, and a high wooded point, off which are two islets. This cove, open to the SE., is a little more than one mile deep and $\frac{1}{2}$ mile wide, and has a fishery settlement. Vessels can anchor in from 13 to 16 fathoms water near the head, but the space is very small. H. M. S. *Forward* (1890) anchored near the head in 9 fathoms water, over sand and mud, with good swinging room.

Little Harbor Deep (Grandes Vaches), immediately south of Union Cove, extends $1\frac{1}{2}$ miles in a northwesterly direction, and affords no shelter; it then turns SW. for the same distance, and is shoal. Little Harbor Deep Head, the south point, is high and barren.

(H. O. Chart No. 1101.)

White Bay is entered between Little Harbor Deep Head and Partridge Point, the latter being 15½ miles ESE. from the former; it then extends 44 miles SSW., diminishing in width gradually to the head. The coast generally is high and wooded, falling in steep slopes to the sea.

The numerous bays and inlets of White Bay are, as a rule, very deep until near the head, when they shoal rapidly.

Ice.—The head of the bay fills in with northern ice and freezes between 25th December and 10th January, the ice breaking up in May. Ice fills in between Little Harbor Deep and Partridge Point, and may remain frozen in until May or June, or clear early in the year and fill again, all depending on the season and the winds.

Little Cat Arm, 6 miles from Little Harbor Deep, runs in westerly with one bend 1½ miles. The north point is rugged with small cliffs. The south point is also rugged, and both are wooded.

Fair anchorage may be had near the head on good holding ground.

Great Cat Arm, 1½ miles from Little Cat Arm, is nearly ½ mile wide at the entrance between two cliffy points. A large slab of gray rock shows in the woods halfway up the south point, that is continued under water by a chain of rocks, and should not be approached within 300 yards. There is no danger in the arm, but the coasts are high and winds blow from them in all directions, rendering navigation under sail very difficult.

Anchorage.—There is shelter as soon as the first elbow is passed, but the water is very deep, and it is necessary to go beyond the second bend to anchor, in 16 fathoms water. This is reported to be one of the few good anchorages in White Bay, the basin at the head, with a bottom of sand and mud, being completely landlocked.

Abreast the rocky islet off the north shore the depth is 7 fathoms; at 1,400 yards from the point of the last bend the depth is 12 fathoms, increasing to 20 fathoms abreast the point.

There are two waterfalls at the head of the arm, causing a stream to set out at the rate of one knot per hour.

Water.—Water can easily be obtained from a stream west of the anchorage.

Cat Head, south of this harbor, is high, steep, and level topped, and shelters a small cove SW. of it; shoal water lies close eastward of the head.

Coast.—At about 5 miles SSW. from Cat Head, rocks lie close to the coast, and at 3 miles from the deep valley the coast lowers and is bordered by a beach of white stones.

Devil Cove, open to the eastward, is 8 miles from Great Cat Arm. A stream falls into the head over some high hills.

Little Coney Arm, at the north side of the entrance to Great Coney Arm, is barred at the middle and affords no shelter. Boats can cross to the basin at the head in 3 feet at low water.

Great Coney Arm is formed by a high bluff promontory, running parallel to the general direction of White Bay, the north extreme of which, Coney Arm Head, is high, rugged, and wooded, and easy of recognition from any direction. The arm is $2\frac{1}{2}$ miles deep, $\frac{1}{2}$ mile wide at the entrance, and diminishes gradually to the saltwater pond at the head.

Anchorage may be had at the head, but wind and sea reach in with NE. winds.

Dossenger Rock, about 400 yards in extent within the 10-fathom line, lies with Coney Arm Head N. 55° W. (N. 24° W. mag.). The least depth obtained on this rock was 5 fathoms, although much less water is reported by local fishermen, and the sea breaks on it in bad weather.

Frenchman Cove, 4 miles SSW. from Coney Arm Head, is one mile deep, and affords no shelter except from offshore winds. A small rock lies near the north point, and a high wooded hill over the south point.

Jackson Arm is a good harbor, situated a little less than 2 miles from Frenchman Cove. The north point is a little, round, burnt hill; the rest of the land around it is high. The entrance is 575 yards wide; immediately within, the harbor expands to $\frac{1}{2}$ mile in diameter, on the north side of which are two small coves with fishing posts. West of this basin the harbor narrows to 300 yards, trending a little more than $\frac{1}{2}$ mile to a second narrows, 150 yards wide, expanding finally in a basin 600 yards in diameter.

From the south shore of the first narrows a chain of rocks and shoal water extends 225 yards, but the north shore is bold-to. There is no other danger at a moderate distance from the shore.

Anchorage may be found beyond the first narrows in 12 fathoms, mud, or in the same depth beyond the second narrows, but the anchor should not be let go in the basin just within the entrance, as the bottom is uneven and the holding ground bad.

A small cove lies SW. of this harbor, off which are some rocks above water.

Wood.—This harbor is said to contain the finest wood in White Bay.

Tides.—It is high water, full and change, in Jackson Arm at 6h. 45m.

Sops Island, 3 miles south from Jackson Arm, is separated on its west side from the mainland by a channel in which there are islets and sunken rocks; at 2 miles from the north extreme of the island this channel is narrowed to 400 yards, south of which are

Georges (Woody) and Anson Islands, forming the north side of Sops Arm. At the NE. extreme is a small cove, where schooners moor, and near the west end, Georges (Woody) Island is joined to the mainland by a bank, over which there is 10 feet at low water.

Caution.—Vessels of more than 14 feet draft should not attempt to pass through the channel inside Sops Island until a more detailed survey has been published. It is recommended not to pass between Anson Island, small and covered with scrub and pines, and Sops Island, as depths of from 3 to 6 fathoms, over rocky bottom, are reported in this passage.

Sops Arm extends west for nearly 3 miles from the SW. extreme of Sops Island to a cove nearly $\frac{1}{4}$ mile in diameter at the head; within the arm are some small islets lying close to the south shore. A few families, maintained by fishing in summer and collecting skins in winter, reside on Sops Island, but there are no other inhabitants in the arm. Vegetables are grown on the island, but no grain.

Rock.—A rock with a depth of 21 feet on it at low water lies near the anchorage in Baldwin Cove, in a position with the center of Emerald Island bearing N. 34° W. (N. 3° W. mag.), distant 650 yards, and 100 yards from Mohawk Point.

Anchorage.—Baldwin Cove, on the south shore of the arm, and about $1\frac{1}{4}$ miles from the SW. extreme of Sops Island, affords anchorage in 10 fathoms water, over mud. There is also anchorage in 19 fathoms water off a small cove at the head of the arm. Small vessels may anchor in this cove, which is barely 400 yards in diameter, in about 5 fathoms water, and anchorage may be obtained off a river with a fishery establishment near it. The mouth of the river is foul a short distance from the shore, but the rest of the coast is bold-to.

Tides.—It is high water, full and change, in Sops Arm at 7h; springs rise 4 feet (approximate).

Spear Point, the south turning point into Sops Arm, is tolerably low and faced by red-colored cliffs.

Salt-water Pond is at the head of a cove $1\frac{1}{4}$ miles from Spear Point, the entrance of which is remarkable. Chouse Brook, 3 miles from the head, has a fishing establishment.

Miller Island (Cerises), the summit of which is 187 feet above high water, lies in the basin at the head of White Bay, and is shaped like a truncated cone when seen from the north, but the south part is much lower, and a reef, with a sunken rock at the NE. extreme, extends about 300 yards from it.

Anchorage may be obtained off the SW. end of Miller Island in from 17 to 18 fathoms, in 10 fathoms water about 800 yards east of the island, and for one vessel in 12 fathoms about 300 yards NE. of Oody Point. The first anchorage is said to be the best.

Gold Cove, north of Miller Island, is surrounded by verdure, and the anchorage is very deep. Vessels should steer for the center of the cove, until a white house on the east shore of the bay appears nearly in line with the east entrance point, bearing N. 59° E. (East mag.), when secure anchorage can be obtained in 25 fathoms water, as neither wind nor sea reaches the head of the bay, so that a NE. gale blowing at the mouth is only known at the head of the bay by the rain falling there.

The low-water extreme at River Head Bay extends about $\frac{1}{2}$ mile from the mouth of the river, and is steep-to, with 20 fathoms close to its outside edge.

Tides.—It is high water, full and change, in River Head Bay at 7h.; springs rise $1\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet.

Coast.—The coast of White Bay is densely wooded, with steep hills intersected by deep ravines. Osmandville and Galeville, two small settlements on the east coast of the bay, each has about 30 inhabitants; no supplies can be procured, but large game abounds near the latter. There are several rocky ledges and bowlders along the coast, and landing is best effected on the shingle spits abreast the settlements.

Granby Island, 3 miles east of Spear Point, has two rocky islets off the east shore and an islet at the NW. end.

Rocks.—A line of detached rocks extends in a southerly direction from the middle of Granby Island for a distance of 850 yards.

The southern rock, nearly awash at low water, when its position is usually marked by the wash or tide rip over it, is situated with the south extreme of Granby Island bearing N. 69° W. (N. 38° W. mag.), distant 900 yards.

The rock is steep-to on its eastern side, leaving a channel 1,100 yards wide between it and the mainland.

Pomley Cove is a small cove behind a pyramidal rock, SE. of Granby Island, and about one mile SW. of Purbeck Cove. Here is a fishing station.

Purbeck Cove, containing a fishing establishment and affording shelter from offshore winds, may be distinguished by the south point, which is white in color, also by a white patch in the cliff near.

Anchorage.—Anchorage can be obtained in this cove in 11 fathoms water, but the anchorage is exposed to winds from north to SW.

Coast.—A small peninsula is situated $2\frac{1}{2}$ miles north of Purbeck Cove, on the south side of which is a small cove with fishing posts. Between this and Purbeck Cove are two rocks above water. Wiseman Cove, north of this peninsula, has a stream at the head, a rock in the middle of the cove, and there is a fishing establishment.

Western or Hauling Arm is a good harbor, with the entrance free from danger, but there is no anchorage until $1\frac{1}{4}$ miles within the arm, behind a point on the south shore, in from 11 to 16 fathoms water, over mud.

On each side of the arm, just within the entrance, is a deep cove. Wild Cove, to the south, the deeper of the two, is exposed and the holding ground bad; Bear Cove, on the north, affords fair anchorage for small vessels off the fishing establishments, sheltered by an islet, with a passage in on either side. The northern passage is the better, and if taking the southern, the islet must be given a good berth. Hauling Point, north of this arm, is tolerably high, wooded, and the north extreme is remarkably white; from the northward it makes as a peninsula sloping to Bear Cove.

Ice.—Western Arm of White Bay freezes over about 20th December and is completely closed by ice, 2 to 3 feet in thickness, till about 10th May. Field ice generally appears between 25th December and 10th January, and disappears from 10th May to 15th June, but has been known to remain as late as 1st July, also to have entirely cleared away by 10th April. The first vessel usually arrives early in May, the last leaving early in January.

Pigeon Islands consist of two large and one small islet, the northern being the largest and the middle only a small rock, with no passage between them and the mainland. Within these islands is a little cove with a fishing establishment.

Middle Arm (Faux Havre), completely barred by rocks, so that boats alone can enter, has a rocky islet off its west point.

Southern or Seal Arm (Bras des Vaux Marin), an excellent harbor with a fishing establishment, is $2\frac{1}{4}$ miles northeastward of Middle Arm; its entrance is free from danger. Cheese Hill, a remarkable round hummock, lies on the east shore of this bay near the head of the harbor, and shoal water extends from the foot of the hill to the opposite shore, barring the passage to the head; the anchorage, in 18 fathoms water, is in a cove west of the hill.

Seal Cove, immediately north of Southern Arm, is open to the west, and affords no anchorage.

Lobster Harbor is a small round basin about 250 yards in diameter. The entrance is difficult to distinguish, and is nearly closed by a chain of islets outside. The passage is along the west shore, and is only 30 yards wide abreast the islands, and contains 8 feet water, but in the harbor there are 13 fathoms. The fishing establishments are on the east shore, on the isthmus of a small peninsula. The coasts are steep round the harbor, except at the head, where some gardens are situated.

Burnt Cove, $\frac{1}{2}$ mile from Lobster Harbor, is a sandy cove said to contain good anchorage in 13 fathoms, sand, good holding

ground. The fishermen report that the sea does not reach in here, a fact corroborated by the grass which grows to the water's edge.

Current.—The current runs in along the west shore and out along the east shore of White Bay, attaining sometimes a velocity of $1\frac{1}{2}$ knots.

Partridge Point (Cap Daim) is tolerably high, sloping gently to the sea, where it is bare and yellowish. Close SE. of it is a large open cove with cliffy shores.

St. Barbe Islands or Horse Islands are two in number, of moderate height and flat. The western is about $9\frac{1}{2}$ miles in an E. by N. direction from Partridge Point, but the relative bearings of these islands and the mainland in the vicinity are reported to differ from what the chart shows.

The passage between the islands is a little more than one mile wide and free from danger, except on the east side, where a shoal, with 4 to 5 fathoms water over it, extends in a westerly direction from the larger island.

The east shore of the eastern and the south shore of the western island are foul, and should be approached with great caution. A rock, with less than 6 feet water, is about $1\frac{1}{2}$ miles west from the SE. point of the eastern island, and about $\frac{1}{2}$ mile from the shore, and on the north side of the same island there is a small rock, above water, about a mile distant from the shore. Two small boat coves are situated west of the SE. point of the eastern island.

Pigeon Island, SSE. a little more than $1\frac{1}{2}$ miles from Cape Crapaud, is close to Paradise Point, a remarkable high point. Between these points is the entrance of a bay, the shores of which are steep-to, except off a cascade just west of Paradise Point, where a rock lies 70 yards from the shore.

Fleur-de-Lis Harbor is one mile southward of Cape Crapaud, and, though small, has good anchorage in it, sheltered from all winds.

The entrance is difficult to distinguish except from the SE., when it will be pointed out by the remarkable mountain having three hummocks, resembling the top of a Fleur-de-Lis, from which both it and the harbor derive the name.

Directions.—Bring the mountain to bear about N. 78° W. (N. 47° W. mag.) and steer for it to the entrance; then keep along the north shore, steering for the fishing establishment on that shore next east of Welch Point. "The Rock," with 8 feet water over it, lies in mid-channel. When Bear Hill (a mound 144 feet high west of the anchorage) comes open north of "The Islet," bearing N. 78° W. (N. 47° W. mag.), steer for Welch Point to get in the middle of the narrows (avoid the bank stretching off "The Islet"), where the summit of Fleur-de-Lis Mountain will be seen a little to the

north of Bear Hill, about N. 81° W. (N. 50° W. mag.), and this will lead into the basin, in the center of which vessels can anchor in 4½ fathoms water, over stiff mud.

The strongest winds are those from NW. and north, that come down in violent squalls. There is never any sea at the anchorage, but after strong breezes from north, round by east to SE., the sea breaks with fury on the outer coast, while the foam stretches across the entrance, looking like breakers, and a heavy swell is felt as far as "The Islet." This phenomenon has been observed to follow a northerly gale at an interval of one day, after the wind has completely fallen, when the sea rose in an hour.

Temporary anchorage in fine weather may be obtained in 12 fathoms water, over coral, ¼ mile S. 78° E. (S. 47° E. mag.) from Starboard Point.

Water can only be obtained conveniently from the cascade just SW. of Partridge Point.

Tides.—It is high water, full and change, at Fleur-de-Lis Harbor at 7h. 15m.; springs rise from 2 to 4 feet.

Green Point, nearly 2 miles from Pigeon Island, is the south extreme of a rugged indented coast, off which lies an islet; it is also the north point of the entrance to Bay Verte, 3½ miles wide.

The Sisters are two rocks nearly in the middle of the entrance to Bay Verte. The northern, 1½ miles S. 56° E. (S. 25° E. mag.) from Green Point, has 5 feet on it at low water, and the sea generally breaks on it. The southern, always uncovered, lies ½ mile S. 40° E. (S. 9° E. mag.) from the northern, is surrounded by deep water, and the sea breaks on it continuously. The passages on each side and between the Sisters are clear.

Coachman Harbor (Havre du Pot d'Étain) is comprised between Green Point and French Island, and is ¼ mile deep from French Island. Tin-pot Islands lie 800 yards E. by S. of French Island, and consist of two groups 400 yards distant from each other, with deep water all round. The north shore of the harbor is clear for nearly a mile from Green Point; shoals with 10 feet least water thence stretch off 350 yards. The head of the harbor consists of North and South Coves, separated by a point, close off which lies Guibert Islet. North Rock is a shoal with 3 feet water, on a ledge extending 350 yards from the east point of North Cove.

The south shore of South Cove is formed by a narrow peninsula surmounted by a little wooded hill, with a fishing establishment at the isthmus, which is here only 55 yards across.

Gentile Islet lies off the north side of the peninsula. It is small and is continued 200 yards to the NW. in shoal water, and shoals lie off the channel separating French Island from the peninsula.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls here fortnightly during summer and autumn.

Anchorage.—South Cove, 400 yards in diameter, affords anchorage in 5 fathoms water, over sand, with good shelter, inside a low rocky islet on which is a beacon.

Easterly winds bring a sea into North Cove.

Tides.—It is high water, full and change, at Coachman Harbor at 7h. 16m.

Bay Verte extends $9\frac{1}{2}$ miles SW. from Coachman Harbor with an average breadth of one mile, the shores being high, steep-to, and wooded nearly throughout. In the middle of the bay, $3\frac{1}{2}$ miles from Coachman Harbor, is a yellow-colored islet, with a little grass on the summit, and steep-to; Duck Islet, wooded, lies one mile farther SW., and has a sunken danger, with 9 feet water over it, lying 350 yards off the NE. point; on this islet small seams of copper have been found, and also in the stream at the head. When entering Bay Verte do not pass between Duck Islet and the yellow islet, but having passed east of the latter, keep on the eastern shore of the bay until past Duck Islet, when course may be shaped in mid-channel. The bay dries from the head for a distance of nearly one mile and shoals suddenly.

Anchorage may be obtained in 13 fathoms water, over mud, with good holding ground, a little east of the second point on the west shore, which is bordered by white rocks; also in 13 fathoms water, over stiff black mud and excellent holding ground, at the head of Bay Verte, off a hut a little south of a low rocky point on the west shore; this latter anchorage is said to be a good place of refuge in NE. gales, at which time the sea breaks as far as Duck Islet.

A low rocky islet is situated on the east shore, $1\frac{1}{2}$ miles from the east entrance point, which is completely bare.

Ice.—Bay Verte freezes solid about the middle of December or early in January. It generally breaks up in May, but has thawed out in the middle of April, remaining fast afterwards until 10th June.

Mings Bight (Baie des Pins), east of Bay Verte, is a little more than 4 miles long and $1\frac{1}{2}$ miles wide. Mings Islets, two reddish rocks, lie near the west point of this bight and are steep-to. Pines Islet, a low rock sheltering a creek fit for boats, lies close to the east point of this bight, called Grappling Point. On this islet and near the creek are fishing stations. The only dangers in this bay lie off a low point on the east shore $1\frac{1}{2}$ miles within Grappling Point, sloping from a barren hill about halfway between Pines Islet and the head. This point should not be approached within 400 yards.

The copper mine in this bight is situated on the western side, at about 2 miles within the entrance. The water in Mings Bight is so deep that at about 50 feet from the shore there is a depth of 5 fathoms.

Anchorage is not to be had till near the head, where the anchor should be let go in 27 fathoms, so that the stern of the vessel when swung should be abreast a conspicuous square bowlder just west of the second stream on the north shore.

Grappling Point is high, cliffy, and steep-to, and the coast continues so to the entrance of Paquet Harbor.

Hardy Harbor, about 4 miles from Grappling Point, is a boat creek, sheltered by Bois Island, barren and near the coast. The entrance is difficult and dangerous with onshore winds.

Paquet Harbor may be recognized easily by Cape Brûlé, the south point of the entrance, surmounted by Gros Morne 577 feet high, and by Calvary Hill 269 feet high, on the north side of the harbor. Pelée Point, north of the entrance, is a peninsula of moderate height, at the extreme of which are several rocky islets with boat passages between. A shoal, with 3½ fathoms, lies 150 yards off the point. The entrance is 550 yards wide, whence the harbor runs WNW. and separates in two arms, North Arm containing fishing establishments, and Paris Bay, running SW. 1¼ miles.

La Baleine, a rock with 9 feet water, lies nearly halfway up the North Arm, and in mid-channel, being connected by a shoal ledge to the west shore. Cape Brûlé in line with Soup Point (the west extreme of the north point of the arm) leads just east of this rock.

Anchorage may be had at the head in 8 to 10 fathoms, fair holding ground, but vessels wishing to stay require heavy anchors and a long scope of cable.

Paris Bay is clear of danger till within 300 yards of the head, but is only 200 yards broad at the narrows, expanding to a basin 400 yards in diameter at the head.

Anchorage may be had for small vessels in 5 fathoms, mud. The holding ground is not good till Pelée Point is shut in with Broussailles Point, the south point of the entrance to Paris Bay. North and west winds produce violent squalls in this harbor that strain the chains of vessels at anchor, and make beating in some-times impossible.

Water may be obtained from a fine waterfall in North Arm, or (not so easily, and only at low water) from a stream, well stocked with fish, at the head of Paris Bay.

Tides.—It is high water, full and change, at Paquet Harbor at 6h. 49m.

The **Coast** trends southeasterly from Paquet Harbor nearly a mile to Cania Cape, off which is a reef and ledge extending 400 yards. A cove is situated a mile south of Cania Cape, it is deep and exposed. Cape Cagnet, white and prolonged by low rocks, forms the north point of Confusion Bay.

Confusion Bay is nearly 3 miles wide between Cape Cagnet and Brents Cove Head, and forms two bights at the head.

Grand Cove, 2 miles from Cape Cagnet, is the western, and is open to the northward. The sides are inaccessible, and boats avoid being caught there with onshore winds.

Round Harbor (Grand Coup de Hache) is the eastern, 3 miles nearly from Brents Cove Head. This harbor is safe but small, and it should not be taken without a pilot.

To enter, the beacon at the head of the harbor should be brought in line with Caroline Point, bearing S. 10° E. (S. 21° W. mag.), which mark will lead between the shoals extending from Major and Blanche Points. The inner anchorage, only 200 yards in diameter, is obstructed by Crocodile Shoal, lying just within the entrance.

Tides.—It is high water, full and change, in Round Harbor at 7h. 15m.; springs rise 5½ feet, neaps rise 3 feet.

Brent Cove (Petit Coup de Hache) is immediately NE. of Round Harbor, being separated by Coup de Hache Point, a high, steep round hill sloping to a white point.

Brent Cove Head is high, steep, and of a dull color; a reef lies a short distance off the shore just east of the head, with a boat passage between. Cape Canaille, a high bold point, is 2 miles eastward of Brent Cove Head.

La Scie Harbor, 1½ miles from Cape Canaille, is easy to recognize from the red rugged appearance of La Chesnais Point, east of the entrance. This small harbor extends about one mile and is 200 yards wide; 800 yards from the head there is foul ground and shallow water; it is easy of access, but being much exposed to northerly winds, that throw in a heavy sea, is not recommended.

Anchorage.—The best holding ground is just within a small cove on the west shore in 15 fathoms water, over mud.

Coast.—The coast is moderately high, steep, and somewhat red in color, NE. of La Scie Harbor, for 4½ miles to North Bill of Cape St. John.

Currents are very strong in the neighborhood of Cape St. John, and generally run to the southward.

CHAPTER VIII.

NEWFOUNDLAND, EAST COAST—CAPE ST. JOHN TO CAPE BONAVISTA.

(H. O. Chart No. 1101.)

Notre Dame Bay is 45 miles wide between Cape St. John and Fogo Island. The coast at the head is divided into a number of arms by numerous islands, among many of which it is not safe to navigate without a pilot.

Cape St. John, the NW. point of Notre Dame Bay, is divided into three principal points, named North, Middle, and South Bills. The two former are terminated by remarkable peaked rocks, and South Bill falls steeply from cliffs 244 feet high.

Remarks on the Ice.—Approaching Notre Dame Bay in the month of June, it will be advisable for vessels bound to Cape St. John or to Little Bay to proceed first to St. Johns and obtain a pilot familiar with the Stag Harbor and Change Island runs and the ice, as it cannot be said with any degree of certainty when the tail of heavy ice ceases to flow in the Arctic Current 50 or 100 miles off the land between Indian Tickle and the Funk Islands; it may be passing in July, so that it is unadvisable for vessels to approach the bay from the eastward early in the season. By keeping near to the shore shelter may be obtained, and the ice avoided.

Cape St. John is usually visited by some ice in the month of June; occasionally it is clear and remains clear after the middle of May, but these seasons are not frequent. The ice is usually in strings or bodies, often several days apart; the strings may be avoided, but it is difficult to keep clear of ice that can not be seen over from the hills, and closes the coast as far as the eye can reach. Shelter must be sought, and therefore local experience is required. The cape is in telegraphic communication with St. Johns, so that the state of the ice may be known to a certain extent; but the ice often travels fast in the SW. current. Days may elapse and no ice be visible from Cape St. John, but in a few hours the ice may come in and close the bay, between the 1st and 28th of June, seldom later. It is, therefore, very difficult to state a safe date, but it may be considered prudent for iron ships not to approach Cape St. John before the 10th of June, and wooden ships about the 1st of June.

Within the bay the ice is often kept off the shore by the streams out of the deep arms. A NE. wind packs the ice into Fogo and to Toulanguet; a SE. wind into Cape St. John and Green Bays.

Gull Island, 463 feet high, is bold-to on all but the eastern side, a short distance from which are two rocks. A small indentation on the south shore, at the bottom of the valley between the two hills, affords the best landing.

Light.—On the summit of Gull Island a cylindrical iron tower, 43 feet in height and painted red and white in vertical stripes, exhibits, at an elevation of 525 feet, an intermittent white light with a period of system of twenty seconds—light for eleven seconds and eclipsed nine seconds; it should be visible 26 miles.

Breakers.—The light-keeper on Gull Island reports breakers about 4 miles NE. from that island; also in a position about $\frac{1}{4}$ mile W. by N. from that island.

Mother Burke Rock, a pinnacle 334 feet high, is joined to the mainland at $\frac{1}{4}$ mile south of South Bill; it shows conspicuously from the line of coast and is steep-to.

Manful Bight, a rugged cove into the head of which a stream falls, is situated $1\frac{1}{4}$ miles south of South Bill. Briney Cove, known by a small shingle beach in the NE. part of the bight, is the station of the guard for the fisheries.

Manful Head, south of the bight, is a bare cone 360 feet high, eastward of which 200 yards lies a rock with 9 feet water on it.

Bishop Rock, 30 feet high, lies $1\frac{1}{4}$ miles S. 65° E. (S. 34° E. mag.) from Manful Head. It is small and bare, with a ledge of rocks extending a short distance from the west side, but is otherwise steep-to.

Shoal Rock, with $3\frac{1}{4}$ fathoms water on it, lies West (N. 59° W. mag.) 1,400 yards from Bishop Rock.

Mad Rock, 10 feet high and bare, is 1,600 yards southward of Manful Head. A rock awash lies a short distance west of Mad Rock, and a shoal with $6\frac{1}{4}$ fathoms water over it is situated south 330 yards from it. Mad Rock Cove, NW. of the rock, has some rocks in it close to the head.

Coast.—The coast from Mad Rock Cove to Shoe Cove Point falls in steep cliffs from hills that attain an elevation of 700 feet, and is steep-to.

Shoe Cove is an open bight $\frac{1}{4}$ mile wide and 400 yards deep, where a small settlement is situated. The shores are foul for 100 yards. Anchorage may be had in 11 to 14 fathoms. Several land-slips mark the hills in this cove and show conspicuously from the southwestward.

The Brook is a small creek situated west of Shoe Cove, into which a stream discharges from a large lake $\frac{1}{4}$ mile inland.

Monks Ground, with 15 feet water over it, extends 267 yards east of a point situated 700 yards SW. of the Brook.

Shoe Cove Rock, with 8 feet water on it in two places, covers a space nearly 200 yards square, and within the depth of 10 fathoms is 600 yards long and 200 yards broad. The nearest part of the rock lies 930 yards S. 59° W. (West mag.) from Shoe Cove Point. Bishop Rock well open east of the mainland, and bearing N. 63° E. (S. 86° E. mag.), leads SE. of this rock.

Coast.—The shore from the Brook to the westward falls in steep cliffs from hills covered with moss, and terminates in rugged points. A high range, attaining an elevation of 537 feet, is separated by a small valley from the coast hills.

Little Caplin Cove is 200 yards deep. A few houses are built at the head. Great Caplin Cove, close south of Little Caplin Cove, has a shingle beach at the head and several peaked rocks close to the shore.

Caplin Cove Head falls in steep cliffs from a partially wooded eminence, with two small peaks 300 feet high, and terminates in a bare, sharp rock 38 feet high.

Beaver Cove Head, $\frac{1}{4}$ mile SW. of Caplin Cove Head, falls steeply from a round hill 552 feet high, covered with an alternation of wood and moss, and is steep-to.

Beaver Cove is an open bight that extends 1,200 yards west from Beaver Cove Head. At the head of the cove a considerable stream drains Beaver Cove Pond, forming a small cascade under a bridge. The west entrance point is foul for a short distance.

Tilt Cove is the shipping place of one of the most valuable copper mines in Newfoundland. The mines were closed in 1885, but have since been reopened and now give employment to about 500 miners, the village containing over 1,000 inhabitants. It is $3\frac{1}{4}$ miles SW. of Shoe Cove, and may be easily recognized by the magazine (a white building standing alone on the south entrance point of the cove). Shoal water extends a few yards from the extreme southern point.

The cove is 265 yards deep and about 400 feet wide, and has a pier on the SW. side which extends 186 feet from the shore, with a depth of 28 feet at low water close to the outer extremity. The sea occasionally washes completely over this pier, but in ordinary summer weather vessels may lay alongside in perfect safety. An anchor should be let go in 9 fathoms water, at a convenient distance from the pier, and a vessel may then be hauled into her berth by means of hawsers secured to large ring-bolts let into the sides of the cove for that purpose. A large settlement with a church is situated round Windsor Lake, immediately to the northward of Tilt Cove. In 1891 the population was 1,004.

Communication.—The Coastal Steamship Company's steamer from St. Johns calls here fortnightly during summer and autumn.

Coal.—A small supply of coal (about 20 tons) may be obtained.

Scrape Point, $\frac{1}{2}$ mile southward of Tilt Cove, is surmounted by a flat-topped hill, 595 feet high, covered with wood and faced by cliffs. A bank with 10 fathoms water over it extends 400 yards from the point.

Venams Bight and Balsam Bud Cove are the north and south coves of an open bay $1\frac{1}{2}$ miles deep and $1\frac{1}{2}$ miles wide lying between Scrape Point and Round Harbor Head. Pigeon Island, 41 feet high, separates these coves.

Round Harbor Head, the south entrance point of this bay and the NE. point of the entrance to Snooks Arm, is surmounted by a round wooded hill 258 feet high, by which it may be easily recognized. Low rocks extend 200 yards from the extreme of the head.

Round Harbor is immediately west of Round Harbor Head, and is entered through a channel 40 yards wide between it and a smooth grassy mound 92 feet high. The harbor is 267 yards long, 150 yards wide, and is available for small schooners only. A sunken rock lies off the first fishing stage in, on the east side, another near the head, and a third just inside the west point of entrance. Only 3 fathoms water can be obtained in the harbor. A heavy sea occasionally makes the entrance almost impassable, but the harbor is always safe.

Snooks Arm extending $2\frac{1}{2}$ miles W. by N. from Round Harbor Head, is $1\frac{1}{2}$ miles wide at the entrance between that head and Pigeon Island and narrows gradually to the brook at the head. The north shore slopes from a range of hills, which are covered with moss, while the south shore falls precipitously from Snooks Head, a flat promontory 628 feet high, with deep ravines intersecting it.

Long Rocks, 3 feet high, lie off the north shore, 1,200 yards west of Round Harbor, and Woody Point is a low projection $\frac{1}{2}$ mile farther in, on the same shore.

Woody Point Rock, with 4 feet water on it, lies south, distant 200 yards from Woody Point, and is the only danger on the north shore.

Pigeon Island, the SW. point of the entrance to Snooks Arm, is separated only by a chasm from the extreme of Snooks Head, and is steep-to.

Mad Moll Rock dries 3 feet at low water. It is $\frac{1}{2}$ mile NW. of Pigeon Island and 100 yards from the SW. shore of Snooks Arm. This is the only danger off that shore, which, however, should not be approached nearer than 200 yards.

Anchorage.—The anchorage in Snooks Arm is limited and available only for a few vessels, but the holding ground is good, in 16 fathoms water, off either of the two coves at the head.

Water.—The watering place is in the west corner of the head of the arm.

Tides.—It is high water, full and change, in Snooks Arm at 7 h. 12 m.; springs rise 4 feet, neaps rise 3½ feet.

Wild Bight, nearly a mile SW. of Snooks Arm, is 1,700 yards wide at the entrance, a mile deep, and 600 yards broad at the head. It is quite open.

Mouse Point, west of the entrance to Wild Bight, slopes steeply from a wooded hill 509 feet high. A rock with 10 feet water on it lies 100 yards off the point.

The Harrys, a ledge of sunken rocks, extend 200 yards from the shore, at 1,300 yards west of Mouse Point. Old Harry, the outer rock, has 9 feet on it at low water. Head Rock, with 4½ fathoms water over it, lies 267 yards south of the east head of Indian Burying Ground Cove.

Indian Burying Ground Cove, an open cove with a settlement round the shores, lies westward of The Harrys. A cascade discharges the waters of a brook that flows down the valley at the head. The cove is shallow, and the shoal water falls suddenly to a depth too great for anchorage.

Bobby Cove is close west of Indian Burying Ground Cove, the point of separation terminating in Bobby Island, small, bare, and 33 feet high. Neither of these coves affords anchorage for large vessels.

Buttonhole Point, lying SW. of these coves, is sharp and narrow, terminating in a mound 50 feet high. A rock with 13 feet water on it lies 100 yards off the point.

Buttonhole Cove, a small indentation, with a store and wharf, lies close west of the point.

Island, 39 feet high, lies close to the shore, 1,267 yards westward of Buttonhole Point. It is round in shape, covered with turf, and steep-to.

Betts Cove is entered ½ mile west of Betts Island. It is 667 yards wide at the entrance, narrows gradually to the head, and contains deep water till abreast the wharves, after which it shallows suddenly. A valuable copper mine, situated to the westward of the cove, has been worked since 1876. A considerable settlement has sprung up in consequence; wharves line the south side of the inner portion of the cove, and others are in course of construction on the north side. The various buildings, smelting houses, etc., form conspicuous objects; a tramway connects the mine with the harbor.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls here fortnightly during summer and autumn.

Buoy.—A red buoy, to which vessels are temporarily secured, is moored in 26 fathoms water, close south of the wharves, and ringbolts (the position of each of which is marked by a white-washed mark) have been let into the sides of the cove, to aid vessels in hauling to the wharves.

The Roman Catholic church, on a summit near the mine, is visible from a northeasterly direction.

Water.—A considerable stream flows into a rugged cove, close within the east entrance point, from which water may be readily obtained.

Betts Head, 1,200 yards SW. of the entrance to the cove, terminates in an islet 10 feet above high water, under the slopes of a double-peaked hill 432 feet high.

A small bare rock is nearly joined to the head, 67 yards east of the islet. Between them there is a small bight, where lighters could load ore in fine weather.

Coast.—The coast trends westward from Betts Head and falls nearly perpendicularly to the sea. That immediately about Betts Head is reddish in color, but west of Betts Head it becomes dark gray and partially covered with trees. A waterfall runs into Betts Bight from a pond inland.

Green Point, a wooded projection 67 feet high, is 1,600 yards westward of Betts Head, under hills 430 feet high. Two low rocks lie close to this point and are steep-to. A shoal is situated a short distance from the shore, at 600 yards westward of Green Point.

Burtons Pond discharges through a small stream, spanned by a bridge, 1,850 yards westward of Green Point. The entrance may be readily distinguished by the gap in the hills. The mouth is barred by a beach of shingle.

Candlemas Head, a round hill 286 feet high, and detached from the main range by a deep valley, marks the west side of Burtons Pond, and is steep-to. Pitman Bight, 350 yards deep and 450 yards wide, is west of this head, but affords no shelter. A hill similar to Candlemas Head, 377 feet high, but with not so deep a valley between it and the next ridge inland, lies just over the east side of the entrance to Nippers Harbor, which is entered 1,200 yards SW. of Candlemas Head.

Nippers Islands are a group containing six principal islands and several rocks. Shoal water extends a short distance from all of them.

Gull Island, the northeasternmost, lies $1\frac{1}{4}$ miles SW. from Betts Head, and comprises a number of rocks joined together at low water. Shoal water lies a short distance from these rocks.

A Ledge with 5 fathoms water extends 400 yards eastward from Gull Island; and Gull Island Ground, a rocky bank, lies farther east.

Gull Rock, dark gray in color and 12 feet above high water, is nearly connected with Gull Island by shoal water, being only 67 yards west of it. Low rocks lie both east and west of Gull Rock, but the water is deep beyond 100 yards from the SW. side.

Alexander Rock, a light-gray islet 22 feet high, with turf at the summit, is 350 yards SW. of Gull Rock, and a shoal, with $3\frac{1}{4}$ fathoms water, between them, at 100 yards from Alexander Rock. Small detached rocks lie close to this islet on all sides.

In taking the channel between Alexander and Gull Rocks a vessel should keep nearer the latter.

A Reef that dries 2 feet lies a short distance SW. of Alexander Rock.

Riding Island is separated by a shallow channel from the south side of Alexander Rock, and is formed of several conical masses of rock joined together and to a round wooded hill 57 feet high at the west extreme.

Fox Island is divided from Riding Island by a passage sufficiently wide for a small boat at low water. It is surmounted by a round hill partly wooded, 75 feet high, and falls in steep cliffs to the southeastward.

Duck Island is connected with the south extreme of Fox Island at low water, and consists of a mound 44 feet high covered with grass, from which a ledge of bare rocks, with a small shoal off the extreme, extends to the southward.

Seal Island, the largest of the Nipper Islands, is 460 yards long, 200 yards wide, and 80 feet above high water. A channel a few yards wide, with a rock in it awash at low water, lies between Seal Island and the west extreme of Duck Island. The summit of the island is covered with small trees and grass, over whitish rock.

Rocks that cover lie about 20 yards off the west extreme, and a rock with 5 feet water is 50 yards SE. from the south extreme.

A Shoal with $2\frac{1}{4}$ fathoms water, occupying a space 100 yards square, lies between Riding and Seal Islands.

Green Island, a round mound 90 feet high, covered with small trees, is 250 yards northward of Seal Island. A small rock, with a shoal in continuation, lies close to both its east and west extremities, and shoal water fringes the south shore a few yards distant.

Nippers Harbor.—This harbor consists of three parts. The eastern, $\frac{1}{4}$ mile long and 250 yards wide, affords anchorage for

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and ringbolts have been let into the rocks for convenience in moor-
ing. The shores are bold, with the exception of the rock off Harbor
Point and another close to the south point of the entrance.

The western part has shoal water extending from a brook in the
west corner, leaving an anchorage, with good shelter for small ves-
sels, 100 yards in diameter, with 6 fathoms water in it. The north
part of Nippers Harbor dries across the mouth at low water, but is
deep within the bar.

A small village with a church is built on the shores of the eastern
part of the harbor, and a chapel, painted yellow, stands on a hill
above the south entrance point.

Communication.—The Coastal Steamship Company's steamer
between St. Johns and Battle Harbor, calls here fortnightly during
summer and autumn.

Noble Head, 800 yards south of the entrance to Nippers Harbor,
is a promontory of dark-gray rock, with a flat summit, 215 feet
high, covered with grass, and two remarkable pinnacle rocks near
the east extreme. It falls in rugged cliffs and is foul round the
base from the accumulated debris. Low rocks lie off the east
extreme, two being close to the shore and two others at 100 yards
from it. The easternmost is one foot above high water, and the
next inshore dries at low water. There is deep water at 100 yards
from the eastern rock.

Noble Cove contains some white houses, built close inshore of
a beach north of Noble Head. The cove is fringed by rocks, is
entirely open to easterly winds, and is unfit for anchorage. There
is a depth of 4 to 6 fathoms at 150 yards from the beach, increasing
quickly to 15 and 26 fathoms.

A Bank, 400 yards long and 150 yards broad within the depth
of 10 fathoms, lies east of Noble Head, and contains three shoals
with 11 feet and 3 and 3½ fathoms, respectively.

Green Head, a wooded, flat-topped hill 278 feet high, forms the
north point of the entrance to Rogues Harbor, and falls in terraces
to the sea. A small islet is joined to the NE. extreme, and the
southern part of the head is steep-to. A low isthmus that has been
partially cultivated, with a beach of shingle on each side, joins this
head to the mainland.

Rogues Harbor, just south of Green Head, is the southern of
two arms of the sea which unite just inside the entrance, the divid-
ing point being Hammer Head, a remarkable bluff hill 559 feet
high, with a conspicuous patch of red rock at the base.

A shoal, having two heads with 5 feet water on them, lies in the
middle of the entrance, and a rock with 15 feet lies close NW. of
this shoal. There is a depth of 7½ fathoms between these rocks

and Green Head, but the best channel is west of them, with 17 fathoms water.

Northwest Arm, 800 yards long and 300 yards wide, affords no anchorage for large vessels, but small schooners may find shelter, off the shingle beach at the head, in 7 fathoms.

Rogues Harbor extends 1,700 yards from West Point and is 500 yards wide at the entrance, but at 800 yards within is contracted by a projecting peninsula, 78 feet high, faced by rugged cliffs and terminating in ragged points. The channel here is only 70 yards wide, and no greater depth can be carried through than 7 feet at low water; but within this bar is a basin 650 yards long and 200 yards broad, with 13 fathoms water in the middle, decreasing gradually in depth to the head. Avoid anchoring off the cove in the east corner, as very heavy squalls sweep over the neck of the peninsula during NE. winds. A waterfall runs into the north side of the harbor from an inland pond. A copper mine is being opened up at the head of this harbor.

Stocking Harbor, 2 miles SW. of Rogues Harbor, is, like the latter, available for small vessels only. It is entered between Flour Cask Head and Burnt Island, a dark bare island 350 yards long and 56 feet high. This channel is 550 yards wide and free from danger.

East Stocking Harbor, an inlet 500 yards deep and 133 yards wide, is the best place of refuge for small vessels, which can anchor as convenient in 10 fathoms water at the entrance, the depth decreasing gradually to the head.

A rock lies about 40 yards off the south entrance point, close within the entrance.

A Shoal, with 5 fathoms water, lies a little more than 200 yards east of Burnt Island.

Pigeon Island is separated from the west side of Burnt Island by a clear channel 250 yards wide, with 13 fathoms water in it. This island is small, wooded, and about 40 feet high.

King Island is close west of Pigeon Island, the passage between being available for boats only; the island is only disconnected from the mainland at high water. It is composed of reddish-gray rock, nearly covered with trees, and is about 70 feet high, with small cliffs to the southward.

John Smith Island is 300 yards westward of King Island and about 400 yards from the mainland. It is 41 feet high, of reddish rock, and terminates to the southward in a low reef, which is steep-to. A shoal, with 10 feet water, lies midway between the south extreme of this reef and a small islet off the west point of King Island.

John Smith Harbor extends 400 yards NW. from John Smith Island and is 150 yards wide at the entrance, decreasing gradually in width to the head. There is good shelter in this harbor for fishing craft and small schooners in 9 to 12 feet.

Coast.—The coast west of John Smith Harbor is bordered by rocks that cover at high water, and small islets, for 400 yards, to Rowland Point.

From this the coast trends west for a distance of 1,800 yards to the entrance of Northwest Arm; it is bold-to, and consists of grayish rock covered by wood.

Green Bay is a long arm of the sea lying between Stocking Harbor and Green Bay Island. It extends in a southwesterly direction for a distance of 15 miles, and is divided into three parts, Northwest, Middle, and Southwest Arms. The water is deep in mid-channel.

Northwest Arm, an excellent harbor, extends NW. for a distance of $1\frac{1}{2}$ miles; it is $\frac{1}{2}$ mile wide at the mouth, expands to $1\frac{1}{2}$ miles within, and then narrows to the head. The only dangers in the entrance are shoals extending from both points of Rix Cove.

A Rock that dries one foot lies 100 yards S. 54° E. (S. 23° E. mag.) from a house painted red, at the north entrance point of Winterhouse Cove, a considerable light on the west shore. There are houses in Winterhouse and Rix Coves.

White Point, a projection terminating in a small cliff, is the south entrance point of Winterhouse Cove; the shore from it to the beach at the head is nearly steep-to. A small wooded mound lies over the coast, 200 yards west of White Point.

Anchorage.—Anchorage may be had as convenient in Northwest Arm, with good holding ground in 10 fathoms, after Winterhouse Cove is passed.

White Hills are 2 miles west of the head of Northwest Arm, and are bare in patches at the summits; the highest is 1,160 feet. A round wooded hill 1,040 feet high lies just north of this range.

Coast.—The coast from the southern entrance to Northwest Arm trends to the southwestward for 2 miles to Middle Arm. Small gray cliffs line the shore, interspersed with beaches of shingle. The hills above are thickly wooded, and one more prominent than the rest, 610 feet high, shows a wooded tuft when seen from the eastward.

Lower Island, 22 feet high, and Upper Island, 24 feet high, two bare rocks, are joined to this shore by bowlders that cover at high water. The former is $\frac{1}{2}$ mile and the latter 1,700 yards from Northwest Arm, and both show prominently against the dark, wooded shore.

A rock with 12 feet water lies 450 yards SW. from Upper Island and 100 yards from the shore.

Two shoals, with $4\frac{1}{2}$ fathoms water on each of them, lie respectively S. 17° E. (S. 14° W. mag.) 650 yards, and S. 22° W. (S. 53° W. mag.) 950 yards from Upper Island.

Middle Arm Rock, one foot above high water and surrounded by shoal water, is close east of the northern entrance to Middle Arm and $\frac{1}{2}$ mile from the north shore. There is a passage between these shoals and the north shore, but it should be used only in cases of emergency, as the sea rolls from shoals to shore in bad weather.

Middle Arm is 1,600 yards wide at the mouth, extending $2\frac{1}{2}$ miles to the sandy spit that marks the termination of the first reach, beyond which there is barely passage for a boat.

Anchorage.—At $1\frac{1}{2}$ miles within the entrance the arm narrows to 800 yards in breadth. This is the eastern limit of the anchorage, in 16 fathoms, and for $\frac{1}{2}$ mile farther west good holding ground will be obtained in 10 fathoms.

Middle Arm Point, the SW. entrance point, may be distinguished by several white patches in the cliff near. A wooded hill, 200 feet high, rises immediately over the point.

Southwest Arm is 1,150 yards wide at the entrance, between Middle Arm Point and Birchy Cove Head, from which it extends 6 miles in a southwesterly direction with the same breadth. The arm then expands to a mile in width, and, with a narrower bend, extends 3 miles farther to the head. The water is deep close to both shores, so that, except for small vessels, there is no anchorage but in the places about to be described.

Southwest Head, 996 feet high, on the west shore, close inside the entrance, is a good mark for recognizing Southwest Arm. The summit is small and round, and the hill falls almost perpendicularly to the water's edge.

Rattling Brook falls into the sea at $6\frac{1}{2}$ miles from the entrance, in a fine waterfall down the chasm in the cliffs on the north shore. A small cove is close SW. of this stream, into which Corner Brook flows and drains a valley extending some miles inland.

Stearin Rock, 13 feet high, is a small double islet at the south side of Corner Brook Cove, and is joined to the main at low water. A rock that dries one foot at low water lies close east of this islet.

The deposit from the brooks has formed a shoal, which dries at low water, extending 200 yards from the shore, and the depth of 3 fathoms is found at 200 yards beyond, the water deepening suddenly to 12 and 18 fathoms.

Anchorage may be obtained by small vessels off Corner Brook Cove in 18 fathoms with a short scope of cable, but the holding ground is not very good.

At $1\frac{1}{5}$ miles south from Stearin Rock is a point projecting slightly from the line of the coast.

A shoal with 11 feet water extends in an easterly direction nearly $\frac{1}{2}$ mile from this point.

King Point, near the head of Southwest Arm, is low and flat, with a few houses on it and some land under cultivation. The head dries 200 yards from the high-water line, and the depth increases suddenly beyond to 15 fathoms. South Brook lies a mile east of the head, and is a fine stream, draining the valley leading to Halls Bay. The deposit from the brook dries at low water for a distance of 300 yards from the mouth, and the water deepens suddenly beyond.

Telegraph Station.—A telegraph station is on the west shore, near the head of the arm.

Ice.—The Southwest Arm of Green Bay freezes between 25th December and 15th January, and breaks up between 15th April and 15th May.

Tides.—It is high water, full and change, in Northwest Arm at 7h. 9m.; springs rise 4 feet, neaps rise 3 feet. In Southwest Arm it is high water, full and change, at 7h. 8m.

Manful Point, $6\frac{1}{2}$ miles from the entrance of Southwest Arm, is a shingle spit falling steeply to deep water. The coast forms a slight curve between these points, and off this a plateau extends with 20 fathoms water at 750 yards distant from the shore and 10 fathoms at $\frac{1}{2}$ mile, shoaling gradually from the latter depth to the coast.

Anchorage may be had on this plateau in depth as convenient, according to the length of the vessel, and this is the only place in which large vessels can anchor with safety, the holding ground being good.

Naked Man, a pillar of rock 14 feet high, stands close to the east shore of Southwest Arm, $2\frac{1}{5}$ miles SW. of Birchy Cove Head.

Copper mines are situated on each side of this rock, and their localities may be distinguished by the houses on the shore. A wharf has been built off that which is situated next west to Naked Man.

Birchy Cove Head is a bare mound 81 feet high, under wooded hillocks 270 feet high. From it the shore of Green Bay curves to the eastward round Birchy and Shilly Coves, two small indentations, round the shores of which are some houses.

Western Point, nearly a mile ENE. of Birchy Cove Head, is low and shelving, terminating in a flat rock 4 feet above high water at the north extreme, and a low reef on the east side. An isolated wooded hillock about 100 feet high surmounts this point.

Jackson Cove, 1,200 yards wide between Western and Eastern Points, and 800 yards deep, is nearly semicircular; it is fringed by beaches of shingle, and surrounded by wooded hills 150 to 300 feet high.

Shoal water extends 100 yards from the shore, and a bank with 6 feet water extends 150 yards from the middle of the cove. A rock, on which a wooden pier has been built, stands close within Western Point.

Fishing Rock, with $3\frac{1}{2}$ fathoms water, is the shoalest part of a bank lying off the mouth of Jackson Cove. It is 750 yards N. 34° E. (N. 65° E. mag.) from Western Point.

Anchorage may be had in this cove, with shelter from all but northerly winds, in 16 to 13 fathoms, but the water shoals suddenly, and care should be taken that the vessel has room to swing clear of the shoal off the middle of the cove.

Eastern Point is the extreme of a wooded mound 85 feet high, joined by a low isthmus to the main. Rocks and shoals extend 100 yards to the westward, and the cove east of this mound is filled with rocks as far as Patrick Point, nearly $\frac{1}{2}$ mile NE. of Eastern Point.

Coast.—The eastern shore of Green Bay slopes from wooded headlands, the most conspicuous of which, Nickeys Nose, falls in a steep bluff from a height of 426 feet.

Several coves indent this shore, all of which afford anchorage for vessels, with shelter from offshore winds. The deepest, named Salmon Cove, is bordered by a beach of shingle, and may be distinguished by a schoolhouse, with a flagstaff near it, on the highest part of the neck between Salmon Cove and Western Arm. Harry Head is the west entrance point to this cove.

The only dangers off this shore are a rock awash at high water, lying 400 yards S. 78° W. (N. 71° W. mag.), and a rock, with 8 feet water over it, lying 400 yards N. 53° E. (N. 83° E. mag.) from the extreme of Nickeys Nose.

A shoal, with 4 fathoms water on it, lies just within Salmon Rock, the east entrance point to Salmon Cove.

Green Bay Island, 202 feet high, is wooded and faced by dark-gray cliffs, up which the sea beats with great violence. Rugged rocks lie all along the shore, but there is no danger beyond 200 yards from the east side of the island.

Green Bay Rock, 9 feet above high water, lies $\frac{1}{2}$ mile S. 60° E. (S. 29° E. mag.) from the NE. point of Green Bay Island, and is the middle of a reef 400 yards long, over which the sea breaks furiously in easterly gales.

Three Arms, comprised between Green Bay Island and Little Bay Head, are respectively named Western, Middle, and Southern Arms.

The Brandies are a group of rocks nearly $\frac{1}{2}$ mile SW. of Green Bay Island. The highest dries 3 feet at low water. Rogues Harbor, open north of Green Bay Island, bearing N. 9° W. (N. 22° E. mag.), leads eastward of these rocks.

Western Arm.—From Blackberry Head, the southern entrance point, Western Arm extends $4\frac{1}{2}$ miles in a southwesterly direction and affords anchorage in several of the coves that indent its shores.

Harry Harbor, a shallow indentation on the north shore, is suitable for small vessels only, having only 9 feet in the entrance at low water. Two rocks lie near the head, the western of which dries at low water.

Harry Harbor Rock, with one foot water on it, lies off the entrance, and as no natural marks could be found to lead into Harry Harbor, those about to enter should buoy the rock beforehand.

Anchorage.—Anchorage may be obtained in depths of 20 fathoms or less, as convenient, to the westward of Windsor Point, near the head of arm.

Dollond Arm, a shallow indentation to the eastward of Dollond Arm Head, a round wooded hill, 323 feet high, forming the south side of the narrows, affords anchorage to small craft, off the entrance, in 15 fathoms water.

Welsh Cove is a secure anchorage on the south side of Western Arm, but the entrance is narrow, and the available passage is contracted to 100 yards by a rock, with 11 feet water on it, extending in a NNE. direction from the south entrance point, and by shoal water, extending a short distance from the north point.

There is no danger within the cove, and good anchorage may be obtained by vessels of moderate length in 12 fathoms water, over mud. A buoy should be placed on the rock off the south entrance point when entering.

A copper mine has been opened near Welsh Cove, the shaft being close to the shore; the manager's dwelling-house, a conspicuous wooden building, is northeastward of the shaft.

The shore is foul for nearly 200 yards from this cove, northward, to the next prominent point, but anchorage may be obtained northwestward of the mine, in 15 fathoms water, over mud.

Middle arm, sheltered by Hennessey Island, 205 feet high, and Three-arms Island, 150 feet high, and accessible on either side of these islands, affords excellent anchorage, in from 11 to 15 fathoms water, over mud. On the west shore, about halfway to the head, are a conspicuous stage and a few houses. There is no danger in the arm, except a sunken boulder, nearly 200 yards from the head.

Old Billy, a dangerous rock, with 3 feet water on it, lies off the NE. extreme of Three-arms Island, and a shoal, with 12 feet water over it, lies off the south side of the entrance to Middle Arm.

Directions.—The best passage is south of Hennessy and Three-arms Islands, bringing the stage on the west shore of Middle Arm just open south of Three-arms Island, bearing S. 66° W. (N. 83° W. mag.), and keeping this mark on until the extremes of Hennessy and Three-arms Islands are closed, about N. 7° W. (N. 24° E. mag.), when Old Billy will be passed, and mid-channel may be taken to the anchorage.

The passage NW. of the islands should be used only by those having accurate local knowledge, as the north shore requires to be kept close aboard.

Southern Arm extends in nearly a straight line 4½ miles, in a SW. direction, to the head.

Two islands lie in the middle of the arm, leaving a passage 100 yards wide, with a depth of 4 fathoms in it, between them and the north shore. Rocks and shoals extend northward of these islands, and the north shore should be kept aboard in taking this passage.

Shoal Arm, 3 miles to the southwestward of Little Bay Head, is entered through a channel about 55 yards wide, in which is a depth of 13 feet water, and has from 7 to 9 fathoms within. There are no dangers in this arm, except a rock with 8 feet water on it, situated 100 yards from the middle of the eastern shore.

Little Bay Head falls in steep cliffs, at the end of the slope from a conspicuous conical hill 657 feet high, and terminates in a small islet.

Wild Bight, the west shore of which is foul for 150 yards, affords anchorage, in from 10 to 13 fathoms water, for small vessels, with shelter from westerly and southerly winds, but the holding ground is not good. With light easterly winds a swell sets in, and when the wind is high the whole of the bight appears a mass of breakers. Red Island, 120 feet, and Red Island Rock, 38 feet high, respectively, form the southeastern entrance point to Wild Bight.

Ice.—Icebergs frequently drift in here during the months of June, July, and August, after the pack ice has left Notre Dame Bay.

Indian Bight.—The head of Indian Bight is 4½ miles southwestward of Red Island Rock, and the south entrance point has sunken rocks extending 200 yards to the northward.

At the head of the bight are dwelling houses, and at their NW. end a wooden church, painted white and having a spire; a wharf projects from the center of the beach, alongside which there is a depth of about 16 feet at low water, but a small rock, which dries 3 feet at low water, marked by a pole surmounted by a white disk, lies close east of the wharf, and the local steamers pass between them.

In the valley between two hills, on the south side, is one of the most valuable copper mines in Newfoundland. A tramway extends from the mine to a wharf in Little Bay, and there is a road to the settlement at the head of Indian Bight.

Dog Stones, two rocks, awash at high water, surrounded by shoals, and occupying altogether a space nearly 400 yards long, are situated in the middle of Indian Bight, 400 yards from the head, and have a narrow passage between the shoal water extending from them and that off the north shore, but the best passage, 150 yards wide, is south of Dog Stones.

Anchorage.—Anchorage, with shelter from offshore winds only, may be obtained by one or two small vessels, in $4\frac{1}{2}$ fathoms water, off the wharf, but a heavy sea rolls in with northeasterly winds.

Telegraph.—There is a telegraph office here in connection with the Anglo-American Telegraph Company.

Water.—Water may be obtained readily from a stream flowing into Shimmy Cove, which lies immediately eastward of Indian Bight.

Little Bay is southward of Indian Bight, the dividing point being a small bluff, off which is Otter Island, surmounted by a conspicuous tree, 352 feet above high water, which rises above densely wooded hills, lying at the entrance to the bay, forming two passages to it. That SW. of the island is nearly barred by rocks, but there is a narrow channel, with a depth of 13 feet in it, at low water; the channel east of Otter Island, though only 60 yards wide, has not less than 11 fathoms water in mid-channel.

There are large copper mines and works, and a wharf is situated immediately southwestward of the western entrance, on the west shore of Little Bay, and vessels drawing 24 feet of water may be loaded alongside, or may find anchorage off it in 13 fathoms water, but it is necessary to moor, as the space is limited, or temporary anchorage may be taken up farther out in 22 fathoms.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls here fortnightly during summer and autumn.

Coal and Supplies.—Cape Breton coal may be obtained from the mining company, but no Welsh coal is kept in stock. Ships can coal alongside the wharf. Provisions in small quantities can generally be obtained.

Little Shellbird Bight, the first deep bend on the south shore of Little Bay, is barred in its western approach by a shoal connecting the west entrance point with Grassy Islet and Little Shellbird Island, and a shoal, with 15 feet water over it, extends 150 yards from the south extreme of Little Shellbird Island, leaving a passage of that breadth between it and the east shore of Little Bay.

Shoal Harbor, on the east shore, where there is a mine, may be distinguished by two low islets forming the north side of the entrance, in which there is a depth of 6 feet water. A rock that uncovers lies in the middle, and other rocks lie close east of the entrance.

Little Bay decreases in width to 200 yards at one mile from the head, and the available channel is still further narrowed to 100 yards by a shoal extending from the south shore.

Anchorage.—Anchorage in from 7 to 8 fathoms water may be obtained by small vessels in Shellbird Bight, entering it from the westward, as a bar, with 16 feet water on it, connects the east extreme of the island with the mainland; or in Northeast Bottom, in 5 fathoms, or in Southeast Bottom, in 9 fathoms water.

Ice.—Little Bay freezes between 1st and 20th January, and is completely blocked with ice about 2 feet thick. It is sometimes open in winter, and clears early in May; navigation has been closed on two years as late as 26th May and 9th June, respectively. Field ice appears about 10th of January and leaves early in May, at which time the first vessel generally arrives, the latest leaving early in January.

Tides.—It is high water, full and change, in Little Bay at 7h. 22m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

Tom Cod Rock, a small pinnacle that uncovers 3 feet at low water, and off the SW. side of which, distant 100 yards, is a rock with 12 feet water over it, is 1,200 yards S. 61° E. (S. 30° E. mag.), nearly, from the NE. extreme of Otter Island. The apparent west shore of Little Bay, in line with the south entrance point, bearing S. 52° W. (S. 33° W. mag.), leads NW. of Tom Cod Rock, and between it and the rock south of Otter Island.

Little Ward Harbor is 800 yards deep and 350 yards wide, but has only 13 feet water in the entrance, and the anchorage is not available for vessels drawing more than 10 feet water.

Beaver Cove Rock, with 15 feet water on it, lies nearly 200 yards west from Beaver Cove Head.

Hall Bay, a picturesque arm of the sea, extends 17 miles in a southwesterly direction, with an almost even breadth of $1\frac{1}{2}$ miles. The land on the north side is reported to contain large quantities of copper.

Communication.—A road will connect Hall Bay with the Northern and Western Railway at a point 4 miles west of Badger Brook, the distance being about 44 miles.

Salt-water Pond Point, on the north shore, $4\frac{1}{2}$ miles within the entrance of Hall Bay, is the east entrance point of a bight $\frac{1}{2}$ mile deep, from the head of which Salt-water Pond, a shallow arm of the sea, extends to within a short distance of Little Ward Harbor.

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Anchorage.—The anchorage off Salt-water Pond is considered the best in Hall Bay; the anchoring space is about $\frac{1}{4}$ mile in extent, shoaling gradually from 7 fathoms water in the center to the shores of the bay. No supplies can be obtained here.

Island Rock Cove, on the north shore, 11½ miles within the entrance, has several houses on the shore and the mine wharf projecting from the eastern extreme, off which 200 yards is a rock, awash at low water.

Lower Wolf Cove, immediately southward of Island Rock Cove, affords anchorage for small vessels close to the shore, but there is no secure position for a large vessel, depths of 30 fathoms being found at 300 yards from the shore.

Green Island is brown in color. A steep hill stands on the north side of the island and is conspicuous from the southwestward, but only the steam jet and flagstaff can be seen from the northeastward. A rocky bank with 12 feet of water over it is 300 yards distant from the NE. extreme of Green Island.

Anchorage.—Anchorage for small vessels may be obtained off the first cove SW. of Burnt Island, the bank extending 335 yards from the shore to the depth of 10 fathoms, but the water deepens suddenly to 60 fathoms, while depths of less than 3 fathoms will be found 100 yards from the shore.

A conspicuous white house stands on Dock Point, nearly $2\frac{1}{2}$ miles from the head of the bay.

Riverhead Brook is a considerable stream, the deposit from which has formed flats of sand that extend across the entrance and to the southward for $\frac{1}{4}$ mile from Eaton Point, east of the entrance, falling quickly to deep water.

Anchorage.—Anchorage may be obtained in the southern part of the head in from 10 to 23 fathoms water as convenient, the latter depth being found at 65 yards from the shore, or when White Point, where are some houses, is in line with the north extreme of Wolf Head. Small vessels will find shelter about $\frac{1}{4}$ mile north-eastward of Eaton Point; depths of less than 10 fathoms extend 300 yards from the coast, and deepen quickly to 24 fathoms.

Ice.—Hall Bay freezes between the end of January and early in February, and breaks up between 20th April and 3d May.

Tides.—It is high water, full and change, in Hall Bay at 7h. 16m.; springs rise 5½ feet, neaps rise 3½ feet.

Wolf Cove is 800 yards deep, 750 yards wide at the entrance, and 400 yards broad at the head; the depths range from 33 fathoms in the entrance to 8 fathoms close to the head, and the shoal water which fringes the shores falls steeply to depths suitable for large vessels.

Boot Harbor is immediately eastward of Boot Harbor Head, a bold bluff surmounted by a wooded hill 228 feet high. Here is a shingle mill worked by the waters of a cascade falling into the harbor, also a wharf, having some white houses near it, and a rock, with one foot water on it, lying 200 yards off its extreme.

Anchorage.—Anchorage may be obtained in Boot Harbor, in from 12 to 15 fathoms water, at 400 yards from the shore. The best position is with the wharf bearing S. 31° E. (South mag.), and the north extreme of the largest wooded islet on the west side of the houses N. 87° W. (N. 56° W. mag.).

Sunday Cove Island.—There is good anchorage at the western entrance of Sunday Cove Island Tickle, in depths of from 6 to 10 fathoms as convenient, and there is no other direction necessary than to attend to the chart.

Wellman Cove is the first indentation on the west shore of Sunday Cove Island, and may be recognized by the houses built on the shore.

A shoal extends 200 yards northeastward from the south entrance point, and the cove is foul generally at that distance from the shore.

Anchorage.—Anchorage, for small vessels only, may be obtained in from 8 to 13 fathoms water off the houses, but the holding ground is bad, except in a small spot, where the local schooners moor.

Sunday Cove Island Bight, on the east shore of the island, and completely exposed to the eastward, may be recognized by the houses and stages erected within the beach of shingle that encircles it; a heavy sea rolls in after autumnal gales, washing away the fishing stages.

A rock lies close eastward of the southernmost stage.

A mine is opened on the north side of this bight, and a temporary wharf has been built, with a magazine near it.

Pilley Island, SE. of Sunday Cove Island, and separated from it by a channel about $\frac{1}{2}$ mile wide, is about 5 miles long in a NNE. and SSW. direction and 3 miles broad. A valuable mine of iron pyrites is situated near the southern part of the island.

Pilley Island Harbor, on the SE. side of Pilley Island, is entered by four channels, viz, Flat Rock Tickle, Raft Tickle, Pretty Tickle, and Pilley Tickle; of these only the two former are suitable for large vessels. The iron pyrites mines afford employment to about 230 men, and about 40,000 tons of iron pyrites are exported annually, principally to the United States. In 1894 the port was entered by 18 steamers, of an aggregate tonnage of 47,000 tons, in addition to coasting vessels; the population is about 1,000, and the imports consist of provisions, dry goods, mining materials and implements.

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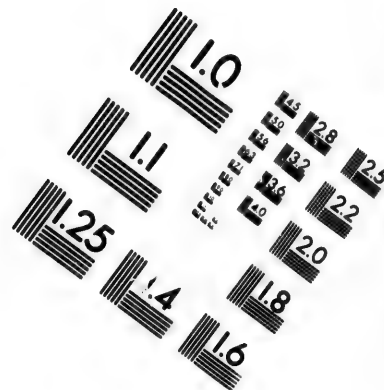
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Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls here fortnightly during summer and autumn; there is irregular overland mail service weekly during winter, in connection with the railway; telegraphic communication only from Little Bay.

Coal and Supplies.—The Iron Pyrites Company usually only keep sufficient coal for their own requirements, but a small quantity might be obtained from them if required. It is difficult to obtain wood in any quantity, and there are no facilities for watering ships, well water being used by the inhabitants. Small repairs to machinery can be made, and there is a foundry which can undertake castings up to 600 pounds.

Flat Rock Tickle, the western channel, is entered between Tilley Head and the SW. point of Pilley Island, about $2\frac{1}{2}$ miles southeastward of Sunday Cove Island. Within the entrance, the channel, about 100 yards in width, lies to the northward of Flat Rock, 3 feet high, and flat, as its name implies. The space between Flat Rock and the mainland, southward of it, is foul ground with numerous shoal heads, and affords no passage for vessels. A shoal extends 300 yards east from Flat Rock, and a reef, which dries at low water, lies in the entrance to Kelly Cove on the north side of the channel. Tilley Head just open of the SW. extreme of Pilley Island, bearing N. 77° W. (N. 46° W. mag.), leads between these dangers, after which a light green point, the first west of Tilley Head, should be brought in line with the SW. extreme of Pilley Island, bearing N. 76° W. (N. 45° W. mag.), which will lead to the southward of a shoal, with $3\frac{1}{2}$ fathoms water over it, and to the channel southward of Fox Island, which, unless with local knowledge, is the one recommended.

Raft Tickle, the south entrance, between Raft and Pretty Islands, has no dangers except shoal water extending about 150 yards from Pretty Island.

Outer Anchorage.—The anchorage, in 20 fathoms water, over mud, is with the center of Fox Island bearing N. 76° W. (N. 45° W. mag.), distant $\frac{1}{2}$ mile; but the holding ground is only fair, and vessels should avoid anchoring on Callaghans Ground, which, with depths of from 6 to 10 fathoms, extends about $\frac{1}{2}$ mile NE. of Raft Island, as, the bottom being of a smooth, rocky nature, the anchor would be likely to drag with any wind.

Dangers.—The channel leading to Salt Pond, the inner anchorage, lies to the westward of Bridges and Farquhar Islands, and is in places barely 65 yards in width. The following are the dangers:

Fox Shoal, with 3 feet water over a rock at the extreme, extends about 350 yards NE. from Fox Island; the northeastern side is sometimes marked by a cask buoy, painted black.

Buzzard Shoal, on which the least depth is 3 feet, lies about 300 yards south of Bridges Island; its southwestern side is marked by a cask buoy, painted black with white chines.

Ledrew Rock, a pinnacle only a few feet in circumference, has 17 feet water over it, and lies 200 yards northwestward of Bridges Island.

Inner Anchorage.—Vessels can moor at the head of Salt Pond in 15 fathoms water, over mud; or they can lie at single anchor with a stern fast to one of the many ringbolts driven into the rocks, the positions of which are indicated by whitewashed marks. Vessels loading ore lie alongside the outer ends of the loading piers, the ore being brought down in trolleys from the mine.

Buoy.—A large square wooden buoy, for warping purposes, is moored about 100 yards SW. of the loading pier.

Directions.—To proceed to the Inner or Salt Pond Anchorage, the Salvation Army meetinghouse (a house with a red roof standing by itself), half its own breadth shut in of the point on the western side of the narrows, bearing North (N. 31° E. mag.), leads between Buzzard and Fox Shoals, after which the west side of Bridges Island should be kept about 100 yards distant until the Methodist chapel (the third white house to the right of the Salvation Army meetinghouse) is just open east of Farquhar Island, bearing N. 1° E. (N. 32° E. mag.), which will lead eastward of Ledrew Rock; thence a mid-channel course, passing westward of all the islands and eastward of a spar buoy opposite Farquhar Island, will lead to the anchorage.

Some of the buoys marking dangers in the approach to this anchorage were out of position in 1896.

Pilots can be obtained at Great Dunier Island Lighthouse.

Tides.—It is high water, full and change, in Pilley Island Harbor at 7 h. 30 m.; springs rise 4 feet, neaps rise 2 feet (approximate).

Roberts Harbor.—A bay is situated southwestward of Pilley Island, having an island (Haywards Gull Island) in the entrance, between the NW. extreme of which and the mainland there are some shoals; the channel southeastward of this island is clear.

A narrow channel, with a depth of 15 fathoms in it, leads from this bay to Roberts Harbor, which is completely sheltered and has good holding ground. Two islets are situated at the entrance, the northeastern of which (Entrance Islet) is wooded and steep-to, lying near the southern entrance point; the southwestern islet is bare and rocky, with a rock having 4 feet over it at low water, lying 65 yards north of the SW. extreme. A rock which uncovers about 2 feet at low water lies about 65 yards WSW. of the northern entrance point.

Directions.—Having passed southward of Haywards Gull Island, steer between it and the mainland, keeping near the southern shore; when entering Roberts Harbor keep near the northern shore, and anchor westward of the entrance as convenient, taking care to avoid the rock lying off the northern entrance point. Vessels should not enter the basin at the northern part of Roberts Harbor.

Anchorage.—Convenient anchorage will be found in the southern part of Roberts Harbor in 10 fathoms water, over mud, affording excellent holding ground. Large vessels should moor, as the width of the harbor is only about 300 yards.

Pilots.—A pilot may be obtained at Little Bay.

Little Bay Islands form a group consisting of one large and several small islands, and contain two good harbors for small vessels.

The west coast of Little Bay Island trends northwestward from Iron Point, and forms Suleyann Cove, where a beach of shingle lines the shore, inside which is a small settlement, containing several conspicuous white houses.

Some yellow rocks, the highest of which is one foot above high water, lie off the south point of Suleyann Cove, and sunken dangers extend southward and westward 200 yards from them. The summit of Little Bay Head, in line with Hynes Point (the SW. extreme of Little Bay Islands), bearing N. 34° W. (N. 3° W. mag.), leads midway between these rocks and Copper Island. Rocks that cover, and shoal ground, extend 200 yards from the beach in Suleyann Cove.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls at Little Bay Islands fortnightly during summer and autumn.

North Harbor is entered between North Head and Harbor Island through a channel 100 yards wide. A small cove indents the south shore, with a few houses in it, off which anchorage may be obtained in 8 fathoms water, over mud.

Southern Harbor is entered through a channel 70 yards wide with a depth of 4 fathoms water in it, between Goat Island, which is partially wooded and 86 feet high, to the eastward, and Macks Island, 140 feet high and faced by gray cliffs, to the westward. The entrance may be readily distinguished by Black Rock, a bare islet 7 feet high, 600 yards from Goat Island.

The harbor, surrounded by a settlement, is 600 yards long and 500 broad, having depths under 3 fathoms, except in a space 350 yards long, in a N. by E. and S. by W. direction, and 150 yards wide, situated immediately within the entrance.

Black Rock Sunker, lying nearly 200 yards S. 35° W. (S. 66° W. mag.) from Black Rock, uncovers 2 feet at low water, and is generally shown by a breaker.

Oil Islands consist of three wooded hills. The westernmost, 221 feet high, is joined to the middle part by a low neck of gravel, and the easternmost is only connected at low water.

Grassy Islands, 200 yards west of the SW. extreme of Long Island, consist of three islets and several rocks joined by shoal water. The westernmost is 20 feet high, while the easternmost, slightly lower, is surmounted by a small bush.

Long Island is wooded at the summit, the highest part near the center of the island being 721 feet high. The south shore, sloping steeply to the sea, is bold-to, and the only houses on this shore are in Patrick Power Cove.

Lush Bight, the deepest cove on the west shore, may be recognized by the houses built round it. The anchorage is available for small vessels only, in depths from $2\frac{1}{2}$ to 4 fathoms, over mud.

The group of islands northward of Long Island are surrounded by a great number of shoals and fishing banks, and vessels should not pass through any of the channels in this group except in fine weather, and then local knowledge is requisite.

Ward Harbor, round which there is a small settlement, is east of Western Head, and contains good anchorage for vessels drawing less than 10 feet water. The passage is midway between Cross Rocks, a small castellated group, 32 feet high, in the middle of the entrance, and the east shore. A reef extends from the west side of the harbor southward of Cross Rocks, and a sunken rock lies close northward of the east entrance point.

Cutwell Harbor, with a small settlement on its north side, is comprised between Giles and Otter Islands, and contains no danger beyond 50 yards from the shore. It is $\frac{1}{4}$ mile in diameter, and the depth of water decreases gradually, from 14 fathoms in the center, to the shore.

Cutwell Arm, an anchorage available only for small vessels, is entered south of Otter Island. The passage, narrowed to a breadth of 40 yards, by shoal water extending from either side, should not be attempted without a pilot.

Tides.—It is high water, full and change, in Cutwell Harbor at 7h. 6m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

Hardrix or Seal Island is surmounted by several conspicuous cones covered with wood, the highest being 294 feet above high water.

Wild Bight, southward of Hardrix Island, affords no safe anchorage, but there are no dangers except a few rocks close to the shore.

Southern Head, the east extreme of Long Island, falls in almost perpendicular cliffs from wooded hills 400 feet high, and is terminated by Southern Head Islet, a bare rock 42 feet high.

Gull Rock, the northernmost of the group, situated north of Long Island, is round, bare, and 50 feet above high water. The only dangers near it are a small islet about 5 feet high, lying close SE. of it, from which two rocks, that cover at high water, extend southwestward a distance of 100 yards.

Middle Islands, the next southward, are a low group, the highest of which, situated at the NE. extreme, is 32 feet above high water and surrounded by rocks extending 200 yards from it. Gunning Rocks, next SE. of Middle Islands, are two small islets 6 feet high, with shoals extending 200 yards from them on all sides but the SE.

Old Bantam, a rock with $3\frac{1}{2}$ fathoms water on it, lies N. 66° E. (S. 83° E. mag.), distant nearly $\frac{1}{2}$ mile from the highest of the Middle Islands.

Stag Island, the largest of these islands, situated near the middle of the group, is shaped like a wedge, falling steeply to the south shore from a hill 233 feet high, covered with small wood.

North Harbor is comprised between the north side of Stag Island and Little Stag Island, and affords good sheltered anchorage for small vessels in 5 fathoms water, over mud. The only danger to be avoided is North Harbor Rock, with 15 feet water over it, lying 200 yards from the NW. extreme of Little Stag Island.

A chain of islets extends southeastward from Stag Island, the southernmost, named Gunning islet, being bare and 25 feet high.

Duck Islands, the easternmost of the group, consist of three grassy islets, the highest, to the southward, being 62 feet high.

Directions.—None of the channels should be attempted except in moderate weather, and the only passages available for a stranger are between Gull Rock and Middle Islands, between Middle Islands and Gunning Rocks, and between Duck Islands and Gunning Islet.

Long Island Tickle, the passage between Long Island and Pilley and Troytown Islands, is free from danger with the exception of a rock, with 15 feet water over it, at one mile eastward of the NW. extreme of Pilley Island, and close to the shore.

Pilley Cove, on the NE. side of Pilley Island, is 350 yards in diameter, and affords anchorage for small vessels. Sunken rocks lie close to both entrance points, and the south shore is foul, but the beach of shingle at the head is bold-to.

To enter, vessels should be kept one-third of the distance across from the west entrance point, and anchor nearer the west than the east shore, in from 5 to 7 fathoms water.

Water.—Water may be procured from a cascade that falls over cliffs on the south side of the cove.

Fox Cove affords no convenient anchorage, several rocks lying at the head.

Stuckey Cove, south of Fox Cove, has no danger in it except close to the shore, and anchorage may be obtained in from 10 to 19 fathoms water, as convenient.

A densely wooded hill, 510 feet high, is situated westward of Stuckey Cove, on the western slope of which is a large pine tree, that towers considerably above the rest of the woods, and shows conspicuously from the eastward.

Big Island is the NW. of a group of islands and rocks, which, together with Troytown Island, form Cobbler and Dark Ticks. From the NE. extreme of Big Island, Cobbler Rocks extend eastward till they nearly join Cobbler Island.

Cobbler Tickle, between Cobbler and Dark Tickle Islands, may be entered from the westward, and affords good anchorage in from 6 to 17 fathoms water, the soundings decreasing gradually from the latter depth to the islets and rocks that fill the eastern end.

Dark Tickle Island is surmounted by a round hill 223 feet high and the north hill has on it two conspicuous trees at an elevation of 132 feet.

Dark Tickle, the passage between Dark Tickle and Troytown Islands, is free from dangers, with the exception of a shoal extending about 30 yards from the SW. extreme of Dark Tickle Island, and a bank, with 13 feet water on it, extending eastward, 150 yards from the first cove southward of the western narrows. The narrowest part of Dark Tickle is 100 yards wide, and the depth of water is not less than 6 fathoms in mid-channel.

Great Troytown Harbor, entered between Dark Tickle Point and Big Troytown Island, extends, with several bends, in a southerly direction for $1\frac{1}{2}$ miles.

The head of Troytown Harbor is divided into two coves by a wooded island 190 feet high. West Arm is available only for boats; and Butler Cove, the southern arm, suitable for small vessels only, is entered through a narrow channel between rocks extending from both entrance points.

Anchorage may be obtained in from 7 to 17 fathoms water, as convenient, in a cove situated $\frac{1}{4}$ mile SW. from Dark Tickle Point, and south of a low sharp point sloping from a wooded hill 185 feet high.

Water.—There are several houses in this cove, and water may be obtained from a brook close to the houses.

Little Troytown Harbor, surrounded by a small settlement, is 850 yards long and 450 wide, and affords good anchorage in 9 fathoms water, over sand.

The northern entrance, 60 yards wide, has a rock, with 15 feet water on it, in mid-channel; but a depth of 5 fathoms may be found by keeping close to the east shore.

Water.—Water may be procured from a brook discharging into a small cove on the south shore.

Tides.—It is high water, full and change, in Troytown Harbor at 7h. 5m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

Grand Dismal Cove, southward of Ragged Point, the NE. point of Troytown Island, should not be entered without a competent pilot, as rocks surround the shores, and a reef named The Sisters extends eastward 250 yards from the south entrance point. A small islet lies close to the north entrance point, from which rocks extend southward for 200 yards.

Tom Cod Rock, with 13 feet water over it, lies at the east extreme of a shoal bank situated in the middle of Grand Dismal Cove, and is 650 yards S. 18° E. (S. 13° W. mag.) from the islet off the north entrance point.

Little Dunier Island, 220 feet high, is a conspicuous wooded island, with a flat summit, lying $\frac{1}{2}$ mile eastward from Ragged Point. The coast line here is deeply fissured.

Great Dunier Island, $\frac{1}{2}$ mile long and 221 feet high, is about $\frac{1}{4}$ mile south of Little Dunier Island.

Light.—From the cupola of a small dwelling, 15 feet in height, on Great Dunier Island, a fixed white light is exhibited at an elevation of 210 feet, which should be visible 16 miles. The light, a private one, is shown between May 15 and December 31.

The Brothers, which uncover 3 feet at low water, are in the channel between Great Dunier and Troytown Islands, and narrow the passage to a breadth of 80 yards, between them and Great Dunier Island.

Nimrod Island, 28 feet high, and separated from Troytown Island by a channel 95 yards wide with 7 fathoms water in it, has low rocks extending 150 yards westward, and shoal water nearly 100 yards eastward from it.

Nimrod Harbor, a small boat cove in Troytown Island, is situated to the northward of the east extreme of Nimrod Island, and has a few houses on the shore.

League Rock, 3 miles N. 30° E. (N. 61° E. mag.) from Great Dunier lighthouse, consists of two parts, separated by a narrow cleft; it is about 40 feet high, surrounded by a bank, and a confused sea is produced in bad weather.

Badger Bay, an arm of the sea SE. of Great Troytown Island, extending SW. for 9 miles, is separated into several bays at the head by projecting points, and contains some dangerous rocks. Seal Bay, east of Badger Bay, stretches in 7 miles.

Leading or Ladle Ticks are a number of passages between several islands and the mainland. The southernmost channel is suitable for small vessels only.

Burnt Island, 250 feet high, the northwesternmost of these islands, is separated from Thomas Rowsell Island, 121 feet high, by a passage 100 yards wide, with 5 fathoms water in it, which may be taken by keeping nearer the shore of Burnt Island than that to the southward.

Near the middle of the south shore of Burnt Island is a small projection, about 100 feet high, surmounted by a flagstaff, and a bank, on which are two shoals, extends southward from this point.

Anchorage may be obtained in the channel between Burnt and Cull Islands in from 12 to 15 fathoms water, over sand, with shelter from all but northeasterly winds. Care must be taken to avoid the shoals mentioned above.

Cull Island rises to a height of 197 feet, in a wooded ridge that extends along the whole length of its western part. Bear Head, at the north extreme, falls in dark perpendicular cliffs to the sea, from an elevation of 205 feet.

A conspicuous wooded mound, 85 feet high, surmounted by a flagstaff, is situated in the middle of the south shore of Cull Island, dividing a small boat cove to the westward, from Mooring Cove to the eastward.

Anchorage for small vessels may be obtained off Mooring Cove, in 13 fathoms water, close to the shore, or south of the channel between Cull and Thomas Rowsell Islands in 12 fathoms water; the latter in fine weather only.

A bar, with 11 feet water over it, extends from the SE. extreme of Cull Island to the mainland, from which it is distant 65 yards.

The Ladle, a square mass of rock 28 feet high, stands on a beach of shingle at the north extreme of the mainland coast, and forms the south side of the narrows between Cull Island and the mainland.

Butler Cove, 800 yards eastward of The Ladle, affords anchorage for small vessels, during fine weather, in 12 fathoms water, at 200 yards from the shore, but the anchorage is unsafe with the heavy sea that rolls in during NE. gales. A beach of shingle, 350 yards long, forms the head, and several houses in the midst of green fields surround this cove.

Alcock Island is densely wooded, and apparently flat, but in reality has several ranges of hills on it, the highest, near the south shore, being 326 feet high.

A small projection, 44 feet high, is situated near the middle of the south shore of Alcock Island, and is only 150 yards from the mainland to the southward, the channel between having a depth of 9 fathoms water.

Anchorage.—Anchorage may be obtained to the westward of these narrows, in the channel between Alcock Island and the mainland, in from 12 to 17 fathoms water, as convenient.

Woody Island, separated from the north extreme of Alcock Island by a clear channel nearly 200 yards wide, is about 184 feet high. Several peaked islets and sunken rocks line the north shore of Woody Island, but the only danger is Snaptail Rock, with 3 feet water over it, lying 150 yards west of the west extreme.

Green Island, so named from the conspicuous grassy covering of the summit, is formed of three parts, the middle, and highest, falling on all sides in dark-gray cliff from a height of 155 feet.

Sunken rocks extend a short distance from this island, and an isolated rock, with 2 feet water on it, lies 150 yards S. 10° W. (S. 41° W. mag.) from the east extreme of Green Island.

Sculpin Island, the northernmost of the group of islands in the neighborhood of Leading Ticks, is 87 feet high and covered with grass.

Several bare rocks lie close to the south shore and form a small creek, in which landing from boats may be effected, except in very bad weather. A rock, with 3 feet water on it, lies close to the SW. extreme. A bank extends northeastward from the NE. extreme of Sculpin Island, on which are situated a rock, with 5 feet water over it, 150 yards distant, and a shoal, with 3 fathoms water on it, 300 yards distant from the SE. extreme of Sculpin Island.

Numerous banks lie off the islands forming Leading Ticks, the positions of which will be best seen on the chart.

Tides.—It is high water, full and change, in the Leading Ticks at 7h. 7m.; springs rise 4½ feet, neaps rise 3 feet.

Thimble Ticks, a number of passages between several islands, are situated southwestward of Leading Ticks, but have not been surveyed. A mine is being worked near these ticks.

Wild Bight, at the east entrance of Leading Ticks, is one mile deep, and divided at the head by a conical hill 285 feet high into two coves, where anchorage may be obtained by small vessels during westerly winds.

Directions.—From the westward vessels may approach Leading Ticks without danger until within 200 yards from the islands, and large vessels may pass between Thomas Rowsell, Cull, and Ward Islands, but no nearer Cull Island than 200 yards, nor to the mainland shore than to have the south extreme of Cull Island, open north of the mainland, bearing N. 66° E. (S. 83° E. mag.), to avoid the shoals off that shore. Vessels drawing more than 11 feet water should not proceed farther eastward than Mooring Cove, off which anchorage may be obtained in from 18 to 20 fathoms water.

Small vessels may proceed to the eastward by keeping in mid-channel between Cull Island and The Ladle.

Vessels may pass in 5 fathoms water between Thomas Rowsell and Burnt Islands by keeping in mid-channel; before the flagstaff on Burnt Island bears N. 31° W. (North mag.) the south extreme of Woody Island must be brought in line with the north extreme of Bear Head, bearing N. 64° E. (S. 85° E. mag.). When the flagstaff bears westward of N. 76° W. (N. 45° W. mag.) the dangers south of Burnt Island will have been passed, and vessels may proceed to the eastward.

New Bay trends to the southward for 12 miles, and is divided into several arms, which are rocky near the shores and encumbered by numerous dangers. The south shore of this bay is formed by a peninsula, with a narrow isthmus in Southwest Arm.

Yellow Fox Cove, on the east side of New Bay, is suitable for boats only; Rowsell Cove, 2 miles southward of New Bay Head, is 330 yards deep, and contains fair anchorage for small vessels in 12 fathoms or less water, as convenient. A conspicuous wooded cone, 380 feet high, rises at the head of the cove.

Josiah Spencer Cove is 300 yards deep, and affords anchorage, with offshore winds, for fishing craft in depths of from 4 to 7 fathoms.

Silver Buckle Island is surmounted by a round wooded hill 155 feet high, and the Silver Buckle, from which the name is derived, is a mass of quartz near the NW. extreme of the island.

Brandies Rocks, the highest 4 feet above high water, lie a little more than 1,200 yards N. 76° W. (N. 45° W. mag.) from Silver Buckle Island.

New Bay Head falls in steep cliffs from an elevation of 270 feet; close north of it are New Bay Head Rocks, 64 feet high, separated by a channel 40 yards wide, with 4 fathoms water in it. Foul ground extends a short distance from the head, and a rock lies close to the south extreme of New Bay Head Rocks.

Fleury Bight, one mile eastward of New Bay Head, has a conspicuous hill, 435 feet high, falling perpendicularly to the head of the bight, where a small village is situated. Sunken rocks encumber Abbot Cove, the bight close south of Eastern Point.

Anchorage.—Anchorage may be obtained in from 14 to 16 fathoms water, but a heavy sea rolls in with winds from NW. to NNE., and it is then untenable, as the holding ground is not good.

Water.—Water may generally be obtained from a stream flowing into the west side of the head.

Woody Island, 188 feet high, and falling steeply in all directions from a flat, wooded summit, is separated by a narrow channel from the east entrance point of Woody Island Bight, an exposed bay eastward of Fleury Bight. A rock with 10 feet water on it lies close northward of this island.

Fortune Harbor, a land-locked anchorage, 2 miles southeastward of Bagg Head, has two entrances formed by Sweeny Island, that to the eastward of the island being only 30 yards wide, and having a depth of 12 feet at low water. The western entrance is suitable for large vessels, if under sail, with a commanding breeze, but the turns are sharp, the wind is often baffling in the approach, and the squalls heavy, particularly with NW. winds.

Western Head, a steep bluff, with a rocky pinnacle at the extreme, is bold-to. From this bluff the land rises in a long bare ridge, wooded on the slopes, to a sharp summit, 555 feet high, surmounted by a cairn.

Western Head Rock, with 12 feet water on it, is the summit of a bank and lies 350 yards N. 18° E. (N. 49° E. mag.) from Western Head. The whole breaks furiously in a heavy sea, and then the passage between it and Western Head may not be taken, but in ordinary weather all danger will be avoided by keeping Western Head close aboard.

Northwest Arm requires skillful navigation, but by attention to the chart small vessels may enter it with safety.

Southeast Arm is 1½ miles long, and contains the best anchorage for large vessels.

A small cove, with a wharf and several stages in it, is situated on the east shore of Southeast Arm, just within the entrance, and on the rising ground, eastward of it, stands the church, painted white.

Webber Bight, completely exposed to north and NW. winds, that roll in a very heavy sea, has no dangers, except close to the shore. A small settlement is situated round a cove on the east side of the head.

Anchorage.—Anchorage, with shelter from offshore winds, may be obtained in from 10 to 16 fathoms water, as convenient, but the holding ground is not good.

Gull Island, a bare rugged rock, 54 feet high, is bold-to on the SE. and south sides, but to the NE. and eastward rocks and shoals extend for 200 yards. Bed Rock, with 9 feet water on it, lies ¼ mile N. 81° E. (S. 68° E. mag.) from the north extreme of Gull Island. The sea breaks heavily over the rock in bad weather, and rolls to the shore over a shoal of 4½ fathoms water, lying between Gull Island and Indian Cove.

Directions.—To enter Fortune Harbor from the westward, either Western Head should be rounded close to, or the south fall of the cliff at Upper Caplin Cove Point be kept open north of Gull Island, bearing S. 85° E. (S. 54° E. mag.), until the eastern entrance to Fortune Harbor is open east of Bellens Point, bearing S. 3° W. (S. 34° W. mag.), to clear Western Head Rock. The vessel may then round into the channel to the entrance of Fortune Harbor,

care being taken, when turning round Sweeny Island, to avoid the rock near the SW. extreme of Sweeny Island.

Mid-channel should be kept between Sweeny and Button Islands, and between Button and Jim Day Islands; when the latter is passed, bring the summit of Macarthy Island over the western extreme of Jim Day Island, bearing about N. 20° W. (N. 11° E. mag.), and steer for the anchorage, in from 10 to 15 fathoms water as convenient, with the church bearing East (S. 59° E. mag.), or farther up Southeast Arm, taking care to keep the western points of that arm well open, to avoid Tiger Rock.

Ice.—Fortune Harbor freezes during the month of December, and breaks up between the 1st and 15th May.

Tides.—It is high water, full and change, in Fortune Harbor at 7h. 14m.; springs rise 4 feet, neaps rise 3 feet.

Shoal Ground, with 3½ fathoms water on it, and which breaks heavily in bad weather, lies ¼ mile N. 36° E. (N. 67° E. mag.) from Keogh Island, a small bare rock 17 feet high.

Bay of Exploits extends 30 miles southward to the river at the head, where several sawmills are working or being constructed. The soil of the Exploits Valley is very fertile, and, where cultivated, produces roots, potatoes, grass, and other crops; the forests consist of pine, spruce, balsam, fir, tamarack, white birch, and poplar.

Exploits River is one mile wide at the mouth, diminishing rapidly until, at 2 miles, it assumes a uniform width of about 750 yards. It is navigable for light draft vessels for 12 miles to the first fall, passing the first rapids at 10 miles from the mouth.

Communication.—The Northern and Western Railway enters the Exploits Valley at Norris Arm; from thence it follows the south side of the river, crossing it by a steel bridge, 630 feet in length, at Bishops Falls, 10 miles from the mouth, and distant 268½ miles from St. Johns. This railway should have the effect of opening up the farming, lumbering, and industrial pursuits of the Exploits Valley. The Coastal Steamship Company's steamers between St. Johns and Battle Harbor call at Exploits fortnightly during summer and autumn.

Anchorage.—There is good anchorage near the head of the bay, but seamen should proceed cautiously after passing a small islet on the east shore, as the water shoals rapidly.

Waldron Cove, southward of Northern Head, is ¼ mile deep, but affords shelter for small vessels only, off a small cove on the south side surrounded by houses.

Little North Harbor affords anchorage for small vessels near the head, in from 4 to 8 fathoms water. In entering, the south shore should be kept aboard to avoid some rocks that extend, nearly to mid-channel, from the north side.

Ship Run Rock lies in the middle of Ship Run, the western channel of Bay of Exploits, and is 1,600 yards S. 46° E. (S. 15° E. mag.) from Northern Head. There is a depth of 9 feet water on the rock, but it often breaks in a heavy sea in such a manner as to resemble the surrounding waves.

Exploits Burnt Islands contain two small harbors in the channels between them. The western island is surmounted by Man-of-war Hill, a bare summit 553 feet high, and the west shore has no danger beyond a short distance from it, and is indented by two small coves. Surgeon Cove, the southern, is almost filled with rocks, but Burton Cove, north of it, contains sheltered anchorage for a few small craft during easterly winds.

Exploits Burnt Islands Harbors consist of Upper Harbor, the southern, and Lower Harbor, the northern, connected by a passage 20 yards wide, with a depth of 6 feet in it at low water.

Upper Harbor affords secure anchorage for small vessels, but a bar, on which are rocks with 6 and 7 feet water over them, extends from the east shore at 300 yards within the entrance, leaving a narrow passage only between its west extreme and the shoal water in Butt Cove, the southernmost indentation on the west shore.

This channel should not be attempted without local knowledge, and strangers should therefore anchor in the entrance, in from 7 to 9 fathoms water.

Lower Harbor affords shelter for small vessels in summer only, in 12 fathoms or less water. The entrance is encumbered with rocks, and should not be attempted without a pilot.

There is a large settlement round Exploits Burnt Island Harbors.

Water.—Small supplies may be procured here, and water, generally from Butt Cove.

Ice.—Exploits Burnt Island Harbors generally freeze about 1st January and clear between 1st and 10th May, and are completely blocked with ice about 2 feet thick between 1st February and 1st April, but between the latter date and 20th May they are open at intervals. Field ice appears between the middle and end of January and disappears between the 1st and 20th May, between which dates the first vessel generally arrives, the last sailing vessel leaving about 15th December and last steamer about 15th January.

Tides.—It is high water, full and change, in Exploits Burnt Islands Harbors at 7h. 17m.; springs rise 4½ feet, neaps rise 2½ feet; neaps range 1½ feet.

Nanny Hole Rock, with 9 feet water on it, lies a little more than 200 yards northwestward of Nanny Hole Head, a precipitous bluff under a bare round hill 340 feet high, ½ mile northeastward of Lower Harbor.

High Gull Island falls in light-gray cliffs from a flat summit, 122 feet high, and is situated northwestward of Gull Island Bight, a rugged bay with a few houses round a cove in the SW. part.

Two rocks are situated northwestward of High Gull Island, the northern, with 3 feet water over it, being 200 yards distant.

Duck Islands, the western 160 feet high, are a wooded group, separated by a channel, 400 yards wide, from the SE. side of the southwestern of Exploits Burnt Islands; they inclose a bay, at the SW. extreme, wherein temporary anchorage may be obtained in 19 fathoms water, but the holding ground is not very good.

Matthew Lane Island, 130 feet high, has a small boat harbor containing several rocks, and sheltered by a small islet, indenting the south shore.

A group of islands lies in Sloop Run, the passage between Exploits Burnt Island and Black Island, the most conspicuous, named Hare Island, being near the west extreme, and surmounted by a round wooded hill, 197 feet high.

Black Island, 412 feet high, presents generally a flat appearance, and has, on its west shore, two coves, round which there are a few houses.

Sealing Cove, the northern, has no danger in it, and affords anchorage for small vessels during easterly winds in from $4\frac{1}{2}$ to 12 fathoms water; Parsons Cove, the southern, is only suitable for boats.

Kiar Cove, at the NE. extreme, is narrow and nearly filled with rocks.

Black Island Tickle, the passage between Black and Little Black Islands, is narrow, and contains numerous rocks, and can only be used by small fishing vessels entering from the eastward, on either side of a group of rocks that cover at high water.

Little Black Island is surmounted near the NE. extreme by a flat wooded hill, 248 feet high. On the SE. side of the island is Southern Harbor, a shallow, exposed cove. A rock, with 15 feet water over it, lies 200 yards eastward of a small black islet, 20 feet high, in the entrance to this harbor.

New World Island.—Puzzle Harbor Head, a round wooded hill 150 feet high, the north entrance point to Puzzle Harbor, is separated by a conspicuous marsh from the higher ranges inland.

Chance Harbor, entered through a passage 200 yards broad, extends 2 miles in an easterly direction, but is navigable for large vessels for one-half that distance only, a bar preventing further passage to all but small craft. The harbor dries for $\frac{1}{2}$ mile from the head.

Anchorage.—Large vessels should anchor immediately within the entrance, in 21 fathoms water, but small craft may proceed to an anchorage in from 5 to 9 fathoms, as convenient.

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Little Chance Harbor, suitable for small vessels only, has a rock, with 5 feet water on it, lying 135 yards northwestward of the east entrance point, and a rock, with 8 feet water over it, 55 yards from the bluff point on the north shore, leaving a passage only 150 yards wide between the rocks. The head of this harbor is shallow as far south as the small islet on the west shore.

Water.—Water may be obtained from a small stream on the east shore.

Tides.—It is high water, full and change, in Little Chance Harbor at 7h. 13m.; springs rise $4\frac{1}{2}$ feet.

Big Gull Island, covered with grass, falls in black cliffs to the northward and eastward, and the summit, 100 feet above high water, is near the SW. extreme, close to which are several small islets.

Little Gull Island, SW. of Big Gull Island, and about 60 feet high, is formed of dark rock nearly split by deep clefts extending from the summit.

Hussey Rock, 10 feet high, lies 300 yards eastward of Big Gull Island.

Western Head of New World Island falls steeply to the sea from a bare mound 100 feet high, and Baldney Rock, 11 feet high, lies close east of the head.

Pearce Harbor, $\frac{1}{4}$ mile deep, contains anchorage for fishing vessels in $3\frac{1}{2}$ fathoms water, with shelter from all but NE. winds.

Morton Harbor is entered southward of Morton Harbor Head, between Neal Islet, a small rock 7 feet high on the west side, and a peninsula 175 feet high, surmounted by a tuft of trees, to the southeastward. The west side of the entrance is bordered by sunken rocks.

Water.—A considerable settlement surrounds this harbor, whence small supplies may be obtained, and water from the head of the western cove.

Little Harbor, a small boat cove, is situated south of the peninsula on the east side of the entrance.

Tides.—It is high water, full and change, in Morton Harbor at 7h. 13m.; springs rise about 5 feet.

Wild Bight, east of Wild Bight Head, is free from danger, and has anchorage in from 11 to 15 fathoms water near the head, but there is no shelter from northerly winds, which send in a heavy sea.

Cuckold Rock, a rugged islet 14 feet high, is the extreme of rocks extending 400 yards northward from Berry Island.

Toad Asses, three conspicuous masses of rock, the highest 63 feet above high water, extend northeastward from an isolated wooded headland 180 feet high, which is connected by a low neck of land, with several houses on it, to Tizard Harbor Head, a similar headland, 194 feet high.

Tizard Harbor, south of this headland, is only 200 yards deep, and has a large settlement surrounding it. It is entered south of an island 35 feet high, with several houses on it, which is joined to the north shore by reefs. The shore is foul for a few yards, and a rock that uncovers 2 feet lies close to the south side of the channel, but small craft may find anchorage in 6 fathoms water.

East Chance Harbor may be distinguished by Chance Harbor Island, a round wooded hillock 150 feet high, 135 yards from the north entrance point; there is no passage for vessels north of this island.

Anchorage.—Anchorage for small vessels may be obtained in from 10 to 19 fathoms water, as convenient, but exposed to easterly winds.

Virgin Arm, a narrow inlet $1\frac{1}{4}$ miles long, marked at its west entrance point by a small islet 10 feet high, close eastward of a beach of shingle, affords anchorage in 17 fathoms or less water, as convenient.

The only dangers are a rock that uncovers 3 feet at low water, lying 100 yards from the west shore, at $\frac{1}{4}$ mile from the entrance, and a rock, with one foot water on it, 100 yards from the east shore, at 1,600 yards from the entrance.

When entering, keep near the east shore till the first-named rock is passed, and anchor in the widest part of the arm in 17 fathoms water, but small craft may proceed to the head by keeping nearer the west than the east shore till the second rock is passed.

Tilt Cove (New World Island) is entered east of Tilt Cove Island, through a channel 70 yards wide, between a small islet on the west side and rocks extending from the east shore. An islet 5 feet high lies in the middle of the cove.

Anchorage.—Anchorage may be obtained in Tilt Cove by small vessels, in 6 fathoms water.

Squid Cove, sheltered by Crow Head Island, affords excellent anchorage in from 6 to 12 fathoms water. A round grassy islet, 20 feet high, with a rock close to the east extreme, lies in the middle of the western approach of the cove; a similar islet lies 550 yards eastward of it, and a bare islet, 17 feet high, lies close to the west entrance point to the cove.

A rock, that covers at high water, lies a short distance northward of the eastern grassy islet, and a shoal, with 15 feet water over it, is 100 yards northeastward of the west entrance point to Squid Cove.

The best entrance is between Sugarloaf and the islets east of Crow Head Island, mid-channel to the anchorage being free from danger.

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Small vessels may enter from the westward on either side of the western grassy islet, and then close south of the eastern islet, remembering that the shoal, with 15 feet water on it, is only 100 yards southward of its south extreme.

Tides.—It is high water, full and change, in Squid Cove at 7h. 15m.; springs rise 5 feet, neaps rise $2\frac{1}{2}$ feet; neaps range $1\frac{1}{2}$ feet.

Trump Islands, a group of two large and several small islets on the west side of Friday Bay, are separated by Trump Island Tickle, a channel filled with islets and rocks.

Captain Pearce Rock, a square islet 17 feet high, lies off the SW. side of the northern island; from it sunken rocks extend 600 yards southward.

Fools Harbor, at the SE. extreme of Trump Islands, is sheltered on the north side by Fools Harbor Islands, a chain of three joined together and to the southern large island at low water. From the easternmost of the islands a spit extends about 300 yards in a southerly direction.

Mouse Rock, a dark peaked islet 17 feet high, is $\frac{1}{2}$ mile north-eastward of North Trump Island, two rocks, awash at low water, lying in the channel between them.

Mouse Island, 800 yards northwestward of Mouse Rock, is flat at the summit, 85 feet high, and covered with scrub. It falls steeply in all directions. A rocky bank, with 7 feet water over it, lies in the channel between Mouse Island and Mouse Rock.

Matthews Island, separated by a clear channel $\frac{1}{2}$ mile wide from Mouse Island, consists of three rocky hillocks connected by low necks of land, the highest being 78 feet high and falling steeply seaward. Low rocks extend from the SW. shore, but the water deepens rapidly round the island.

Toulinguet Islands form a group consisting of two large islands known as North and South Islands, with several smaller islands off them, and are separated from New World Island by Main Tickle.

North Island is connected at low water with South Island, and at all times communication is maintained by a bridge. The best mark of recognition is the lighthouse on Devils Cove Head.

Back Harbor, on the SW. shore of North Island, is surrounded by a large settlement and entered through a passage 300 yards wide, between Batrux Island to the southward and Back Harbor Head to the northward. It is 700 yards in diameter, but the anchorage space is restricted to 400 yards by shoals extending from both shores.

Directions.—Having made Back Harbor, Gull Island, steer to pass south of it, and then proceed in mid-channel into the harbor,

where anchorage may be obtained, in from $4\frac{1}{2}$ to 9 fathoms water, with shelter from all winds but those from WNW., which send in a heavy sea in autumnal gales.

Long Point, the north extreme of North Island, is the termination of a line of low bare rocks, at the SW. extremity of which is situated the Pinnacle, a conspicuous conical cliff 153 feet high.

Devils Cove Head, close south of Long Point, is inaccessible from the sea, falling in steep cliffs to the water's edge, except immediately under the lighthouse where there is a landslip. Near the base of the landslip is a reddish rock, the only slab of that color on the outer coast in the neighborhood of Toulinguet Islands. The approach to this head is bold, and there is no appreciable change in the depth of water till within a short distance of the shore.

Light.—On Devils Cove Head an octagonal tower 49 feet in height, with a square base, a circular lantern, and painted red, exhibits, at an elevation of 331 feet, a revolving white light with a period of revolution of thirty seconds, that should be visible 21 miles. The keeper's dwelling is painted white, with a red roof.

Toulinguet Harbor, entered through a passage 900 yards wide, between Cuckold Point and Burnt Island, is a little more than 2 miles in length from the entrance, diminishing in width gradually to the drawbridge at the head, which crosses a canal, through Shoal Tickle, having a depth of about 10 feet in it at high water.

The principal part of the town of Toulinguet, which in 1891 had a population of 3,585, is round the shores of the harbor south of the wharves.

Light.—A fixed red light, exhibited at the end of the pier on the western side of the harbor, which, bearing South (S. 31° W. mag.), leads up the harbor.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls here fortnightly during summer and autumn; a small steamer runs frequently to Norris Arm, in connection with the railway, and there is telegraphic communication with St. Johns.

Anchorage.—The anchorage in this harbor is not good, being exposed to northerly winds that bring in a heavy sea, and the holding ground is indifferent. The best place is off the west shore, abreast of the point just north of the church, in 6 fathoms water, but the head of the harbor is shallow and encumbered with rocks, so that the church on North Island should not be brought to bear west of S. 80° W. (N. 69° W. mag.).

Coal and Supplies.—Water can be procured from a Government well near the road east of the church. A small quantity of coal (about 20 tons) and supplies may be obtained from the trading firms established here.

Ice.—Toulinguet Harbor freezes over about 22d January and clears about 6th May, the ice being from 2 to 3 feet in thickness; it is, however, open at intervals between the above dates. Field ice generally appears between 10th and 20th February and disappears about 24th April. The first vessel usually arrives about 25th May, the last vessel leaving about 7th December.

Tides.—It is high water, full and change, in Toulinguet Harbor at 7h. 8m.; springs rise 4 feet, neaps rise 3½ feet.

White Ground, with 5 feet water on it, is 350 yards west from Higgins Island, a grassy islet 21 feet high, at the north entrance point of Jenkins Cove.

Durrels Arm, eastward of Toulinguet Harbor, contains numerous rocks and shoals extending a considerable distance from the shore, and there is no safe anchorage for a large vessel. Small craft, navigated by those possessing local knowledge, find shelter at the head, but a heavy sea rolls in with NE. gales.

Burnt Island is separated from North Island by Burnt Island Tickle, a passage ¼ mile wide, but so encumbered by rocks as to be navigable only by those having local knowledge.

The Rags, 23 feet high, is the easternmost of this group. Rags Rock, with 11 feet water over it, lies 100 yards north of The Rags, and other shoals lie at 400 yards from the north shores of the group. When approaching Toulinguet Harbor from the eastward, keep nearer Gull Island than Burnt Island until French Head is in line with the east extreme of the latter, bearing S. 50° E. (S. 19° E. mag.), when the entrance of the harbor may be steered for.

Gull Island, 161 feet high, is a good mark of recognition for Toulinguet Harbor; it is flat at the summit, covered with grass, and falls in steep cliffs nearly all round. A peaked islet, 96 feet high, is separated by a narrow channel from the west extreme; sunken rocks extend a short distance from the south point, and Gull Island Rock, with 13 feet water on it, lies nearly 100 yards north of the north extreme.

Old Harry is the name of two shoals, 200 yards apart, lying NNW. and SSE. of each other; the southern with 16 feet water over it, is 1¼ miles N. 31° W. (North mag.) from Gull Island, and the northern rock has 3½ fathoms water on it.

Western Head of New World Island, well open west of West Shag Rock, bearing S. 28° W. (S. 59° W. mag.), leads west; Sleepy Cove (Gull Island), open north of Lower Head, S. 29° W. (S. 60° W. mag.), leads SE.; Burnt Island, open west of Gull Island, bearing S. 31° E. (South mag.), leads SW.; and Carters Head, just open west of Burnt Island, S. 6° E. (S. 25° W. mag.), leads east of these dangers.

Several banks are northward of Toulinguet Island, but they only break in bad weather.

South Toulinguet Island is much diversified in feature, the land to the northward alternating in hill and dale, while to the southward the hills fall steeply to the eastern shore, and a low flat with numerous lakes extends thence to the west coast.

Bluff Head Cove lies southward of Rodney Cove, and contains anchorage for small craft in from 4 to 6 fathoms water, eastward of a small islet, 12 feet high, lying in the entrance. The best passage is north of the island, as foul ground extends westward from the south entrance point to the cove.

The coast southward of Bluff Head comprises several coves, wherein anchorage, with shelter from offshore winds, may be obtained by small craft aided by local knowledge. Small islets lie off the entrance points.

Kiddle Cove, a shallow boat harbor, marked by a conspicuous house, painted white, lies 1,200 yards southeastward of Moses Point; an island about 30 feet high marks the entrance.

Black Island, 243 feet high, has a bare hill 135 feet high rising from the NE. extreme and falling to a low isthmus at the head of Black Island Harbor. This harbor, near the NW. extreme of Black Island, is available for large fishing boats.

Middle Ground, a dangerous rock with 4 feet water on it, lies 1,200 yards N. 49° W. (N. 18° W. mag.) from the west extreme of Black Island.

Main Tickle, the passage between South Island and New World Island, is much frequented by fishing vessels to avoid the heavy sea off the north extremes of Toulinguet Islands when the wind is foul. It is $\frac{1}{4}$ mile wide at the narrowest part, between Vincent Point and Indian Cove Head, which form the west entrance.

The west shore of Main Tickle is bordered by rocks, some cover and some below water. Purcell Harbor is on this shore, and contains a large village, the easternmost house on the north shore being a large dwelling under the slope of a hill surmounted by a flagstaff.

Main Tickle Island, 92 feet high, lies in the middle of the east entrance to the Tickle, with a clear passage on both sides.

Little Harbor, at the head of the bight, north of Big Head, is available only for small vessels aided by local knowledge, and in fine weather. Two rocks lie in the middle of the entrance, and the best passage is between them, but there is also a channel close to the north entrance point into the harbor.

Byrne and Little Byrne Coves, round which there are a few houses, are $\frac{1}{4}$ mile southward of the western entrance to Main Tickle. Byrne Cove Rocks lie off the entrance, the southernmost,

which uncovers 5 feet at low water, being 400 yards northwestward of the south entrance point to Byrne Cove.

The entrance to the coves is southward of the islet, 7 feet high, or close to the south entrance point to Byrne Cove. The heads of both the coves are foul, but anchorage may be obtained in the entrance in from 8 to 10 fathoms water.

Indian Cove, divided from Little Byrne Cove by a promontory, on which are two conspicuous cones, 250 and 260 feet high, has no danger in it, but shoal water extends 300 yards from the head.

Anchorage.—Anchorage may be taken up as convenient, in depths of from 19 fathoms, at the entrance, to 3 fathoms at $\frac{1}{4}$ mile within.

Lobster Harbor, suitable for boats only, is a shallow inlet at the southern part of a small bight. Anchorage may be obtained, in from 8 to 12 fathoms water, in the bight, and water procured from a small stream on the south side of the harbor.

Directions.—If from the eastward, Main Tickle Island should be steered for and passed on either side in mid-channel. Having passed the above island, the vessel should be kept in mid-channel, as there are no dangers farther off either shore than 300 yards.

Large vessels should pass south of Black Island, avoiding the shoal, with 4 fathoms water on it, westward of Indian Cove. There is no other danger till near the SW. extreme of Black Island, when the square rock point, on that island, must be kept well open south of the red point, bearing N. 38° E. (N. 69° E. mag.), until the west extreme of Duck Island is open west of Black Island, bearing N. 15° W. (N. 16° E. mag.), when the SW. extreme of Black Island may be rounded and Friday Bay entered, taking care to bring Back Harbor Head open west of Bluff Head, N. 28° W. (N. 3° E. mag.), to avoid Middle Ground.

Bacalhao Island, 9 miles east from Toulinguet Harbor, is barren, having the highest part near the west end, 324 feet above high water.

Light.—From a cylindrical iron tower, 29 feet in height and painted red and white in spirals, on Bacalhao Island, an intermittent white light is exhibited at an elevation of 351 feet. It has a period of system of six seconds, viz, light three seconds, eclipse three seconds, and should be visible 13 miles; but not being constantly watched, it should not be implicitly relied on. The keeper's dwelling, NE. of the lighthouse, and the covered way connecting it, are painted white.

Bacalhao Rock, 4 feet high, and foul all round, should not be approached nearer than $\frac{1}{4}$ mile. It lies about one mile N. 80° E. (S. 69° E. mag.) from the NE. end of Bacalhao Island.

Joe Rock, with 3 fathoms water over it, lies 900 yards N. 59° E. (East mag.) from the NE. point of this island.

Berry Island, rocky, barren, and 186 feet high, lies 1,400 yards SW. of Bacalhao Island, and has a rock, with 15 feet water over it, lying 200 yards north from its NE. extreme.

Starve Head, a steep cliff, 239 feet high, is separated from Berry Island by a channel 1,200 yards wide, in the middle of which is Clarke Rock, small and covered at high water, but generally showing by a breaker. Between the rock and Berry Island is a clear channel, but no vessel should pass between it and Starve Head.

Starve Harbor lies immediately east of Starve Head. The entrance is about 30 yards wide and 200 yards long, with 4 fathoms water; it opens out to a deep-water basin 400 yards wide and $\frac{1}{4}$ mile long. There is a reef on the west side just within the entrance, so that it is necessary to round close by the island forming the east head.

Goldson Arm.—Herring Neck, lying between the land of Starve and the peninsula of Herring Head, is the inhabited portion of the entrance to Goldson Arm.

When proceeding up the arm, keep on the west shore, which is steep-to for $1\frac{1}{2}$ miles. A small vessel may anchor in Ship Cove, just within the north head.

On the same shore, $\frac{1}{4}$ mile farther up, is Starve Cove, also affording anchorage for a small vessel. There are rocks a few yards off both the entrance points. Both the above-mentioned coves are so small that a vessel seeking anchorage could not be sure of finding room in them. The depth, in the main part of the arm off them, is 30 fathoms, so that it would be requisite to run farther up, about $1\frac{1}{2}$ miles above the entrance, to Burnt Arm.

Goose Islands, a small group lying midway between Berry Island and Herring Head promontory, are steep all round.

Herring Head, a steep headland rising 264 feet above the sea, is $1\frac{1}{2}$ miles SE. from the SW. extreme of Bacalhao Island.

Herring Islands, 400 yards off the head, are small, about 20 feet high, and may be passed on either side, being steep all round.

Kiar Reef, awash at low water, can generally be distinguished by the sea breaking on it, and is $\frac{1}{4}$ mile N. 59° E. (East mag.) from Herring Islands.

Blowhard Rock, 400 yards S. 80° W. (N. 69° W. mag.) of Kiar Reef, with deep water between, breaks heavily, but not continuously, in a moderate sea.

Northeast for 3 miles from Kiar Reef, in continuation of the line of Herring Head promontory, are small patches of from 7 to 14 fathoms water, which break at times during a heavy sea.

Red Islet, small and low, lies $\frac{1}{2}$ mile S. 53° E. (S. 22° E. mag.) from Herring Head, with a reef extending 200 yards from the NE. extreme; Haypook is a dangerous rock lying 400 yards S. 10° W. (S. 41° W. mag.) from Red Islet.

Duck Island, $2\frac{1}{4}$ miles SSE. from Bacalhao Island, is 181 feet high. Two rocks lie 200 yards off the NW. side; the SW. extreme is foul for 300 yards, but the SE. shore is bold-to.

Moorham Reef, lying one mile N. 41° E. (N. 72° E. mag.) from Duck Island, is awash at low water, and can generally be distinguished by the sea breaking over it.

Grassy Islets, a low group, are separated from the SW. extreme of Duck Island by a narrow but deep channel. Grassy Rock, 550 yards N. 59° E. (East mag.) from the NE. end of Grassy Islets, has 3 fathoms water on it.

Jacks Island is $\frac{1}{4}$ mile south of Duck Island, its eastern and highest peak, 235 feet high, is remarkable. Between Jacks Island and the point of New World Island, SW. of it, are three tickles leading into Cobbs Arm; of these, Long and Treenail Tickles are only available for boats.

Between Herring Head and Duck Island are Cobbs, Little Cobbs, and Pikes Arms. The two latter are encumbered with rocks, and a heavy sea rolls in, rendering them of no value except for fishing boats.

Cobbs Arm extends 3 miles with a breadth of 800 yards, where there is an indifferent summer anchorage in 13 fathoms water, off the narrow entrance of a shoal continuation of the arm. A swell rolls in after gales from seaward. Limestone can be obtained on the south side of the anchorage and in the continuation of the arm.

Entering Cobbs Arm, give Duck Island a berth of 300 yards and Red Islet a berth of the same distance; and in going up keep the east end of Bacalhao Island open east of Red Islet, bearing about N. 2° E. (N. 33° E. mag.), until up to Tinker Island, which shows as a small cone 60 feet high. From this to the anchorage there are no dangers on the north shore.

A rock, with $1\frac{1}{2}$ feet water over it, lies nearly in the center of the arm $\frac{1}{4}$ mile from the narrow entrance of the shoal arm.

Small vessels drawing 11 feet water may enter the shoal arm, by keeping close to the west point of the entrance, to avoid the rocky ground extending across the channel toward this point from the islet that lies in the middle of the entrance. When within the point, approach the west shore and anchor in smooth water. Above the islet the deep water is on the east shore, the west being shoal and rocky.

Lobster Islet, one mile south from Jacks Island, $\frac{1}{4}$ mile off the nearest land, is small, 10 feet high, and foul all round for nearly

200 yards. Brandies Rock, awash at low water, lies 600 yards ENE. of Lobster Islet.

Milliners Arm, $\frac{1}{2}$ mile south of Lobster Islet, is rocky, open to the NE., and does not afford convenient anchorage.

Dram Island, small and 30 feet high, lies $1\frac{1}{4}$ miles SSE. from Lobster Islet.

Ninepin Arm, a little more than 2 miles to the southwestward of Dram Island, is full of rocks, and the north point is foul for 200 yards.

Currans-Green-Field, a small low grassy island, lies SW. by W. nearly 3 miles from Dram Island and immediately south of Ninepin Arm. SW. of this island is fair anchorage in 8 fathoms water. A shoal extends southward from the island for nearly 200 yards.

Dildo Run, to the southwestward of Currans-Green-Field, is an intricate channel south of New World Island, sometimes used by small vessels bound to the Labrador Coast in the spring, when from foul winds or ice it is inconvenient to take the outer route. There is at least 12 feet in this run at low water, but it has not been surveyed. The inhabitants of those parts frequent it when proceeding to Exploits River for wood.

Pilots.—Good pilots may be obtained on the outer coast between Tilton Harbor, on Fogo Island, and Change Island Harbor.

Beaver Cove, 2 miles S. by E. from Currans-Green-Field, is divided into two arms by a low rocky islet. The eastern arm is full of stones; the western is 400 yards wide and 800 yards deep, with good anchorage in from 3 to 6 fathoms water, over mud. A rock, that covers at first quarter flood, lies 100 yards northeastward of the south point of this arm.

Beaver Head, a remarkable steep bluff 180 feet high, lies one mile north from Beaver Cove.

Little Beaver Cove, $1\frac{1}{4}$ miles to the northeastward of Beaver Head, extends $\frac{1}{2}$ mile in a southwesterly direction, with a breadth of 400 yards, and has depths varying from 4 to 8 fathoms, but no holding ground, and, as a heavy swell sets into it from the NE., it is useless as an anchorage.

Coast.—The coast between Beaver Head and Farewell Duck Islands should not be approached by a stranger inside the line of East Garden and Indian Garden Islands.

Farewell Duck Islands, 4 miles northeastward of Beaver Head, form a long ragged promontory, terminating in a small islet just awash at high water, and Farewell Reef, 600 yards long, breaking in a moderate sea.

Indian Garden Island, small, rocky, and 49 feet high, lies a little more than $1\frac{1}{4}$ miles west from Farewell Duck Islands; a reef extends 400 yards north, and off the SW. end is a low rocky islet.

A rock, with 3 feet water over it, lies 1,300 yards S. 24° W. (S. 55° W. mag.), and another with the same depth 110 yards S. 53° E. (S. 23° E. mag.) from Indian Garden Island.

East Garden Island, flat and about 40 feet high, lies 800 yards northward of Farewell Duck Islands.

Garden Rock, on which the depth is 6 feet, lies $\frac{1}{2}$ mile N. 24° E. (N. 55° E. mag.) from East Garden Island.

Farewell Gull Island lies close off Farewell Head, is 100 feet high, and conspicuous when seen from the north or south.

Farewell Harbor, immediately west of Farewell Gull Island, is open and exposed, 800 yards wide and 1,600 yards deep, with anchorage in from 4 to 8 fathoms water, over mud; NE. winds blow into the bay with a fetch of $2\frac{1}{2}$ miles from South End Point. In continuation of the bay is a shoal arm encumbered by bowlders, extending inland about $1\frac{1}{2}$ miles.

Dog Reef, one mile N. 70° E. (S. 79° E. mag.) from Farewell Gull Island, is $\frac{1}{2}$ mile long, east and west.

Change Island.—The west coast of Change Island has a general trend north for 7 miles, and affords no shelter but for the small craft of the fishermen, except in Deep Cove, $2\frac{1}{2}$ miles north of South End Point, which is 200 yards wide and 800 yards deep, with from 3 to 6 fathoms water, over sand. The entrance is easily recognized, being midway between Wood Islands on the north and the Water Bears on the south. These latter, though they cover at high water, will generally be seen.

Smoker Island, 3 miles NNW. of South End Point and $\frac{1}{2}$ mile from the nearest rocks off Wood Islands, is 20 feet high and flat. A rock, on which there is a depth of 9 feet, lies $\frac{1}{2}$ mile south from the south extreme of Smoker Island.

Ragged Islets, one mile north of Smoker Island and the same distance off shore, are low, with many sunken rocks around them. Pipe Rock, the outer, lies $\frac{1}{2}$ mile W. by S. from the southern Ragged Islet, has 2 feet water over it, and breaks in a moderate sea. South End Point in line with Smoker Island, bearing S. 34° E. (S. 3° E. mag.), leads west of it.

Shag Islets cover a space $1\frac{1}{2}$ miles ENE. and WSW. and $\frac{1}{2}$ mile wide, with a general height of 20 feet. They lie $1\frac{1}{2}$ miles in a northerly direction from Ragged Islets. Mile Islet, the northeasternmost, is about 1,200 yards from the shore, and they are the most northern islets off the west coast of Change Island.

Shag Rock, with 4 feet water over it, often breaks, and lies 700 yards S. 36° W. (S. 67° W. mag.) from the southwestern Shag Islet. South End Point touching the east side of Smoker Island, bearing S. 34° E. (S. 3° E. mag.), leads SW. of it.

Change Island Tickle, at the northern part of Change Island, with a depth of 12 feet in the shoalest part, is a safe and convenient harbor for a small vessel, and may be entered from the eastward in any weather; but this entrance is difficult for a stranger to recognize, unless the houses on its shores are seen.

Tobacco Island, and two or three of the islands within it, being dome-shaped and 50 to 70 feet high, may help to distinguish it, while Ruth Island, on the south side of the entrance, is about 20 feet high, and, together with those within it, generally flat.

A rock, about 200 yards in extent, with 12 feet water over it, that breaks heavily, lies 200 yards N. 64° E. (S. 85° E. mag.) from Ruth Island. In light winds with a heavy sea it is better to pass south of Ruth Island, to avoid the danger of being thrown onto this rock.

Directions.—The passage between Tobacco and Ruth Islands is free from dangers, and after passing between the two rocky islets on the north, and Ruth Island on the south, bring the points of the tickle just closed in to bear S. 61° W. (N. 88° W. mag.), to avoid White Ground on the north and Skinner Rock on the south; and when the last tickle on the north is open N. 15° W. (N. 16° E. mag.), or Skinner Cove bears S. 31° E. (South mag.), the vessel will be past both those dangers, and may open the points of the tickle, and anchor in from 6 to 8 fathoms water, over mud.

Ice.—Change Island Tickle fills in with northern ice and freezes from Herring Head to the north end of Change Island, and from Tobacco Island to Brimstone Head. It usually breaks up between 20th April and 10th May, but an easterly sea will break it up earlier.

In May and June, when the ice is in a body from the Funk Islands to Cape Fogo, partly owing to the ebb tide setting out of Dildo Run and the stream of the Gander River, Change and Stag Island Ticks are often sufficiently clear to allow vessels to pass through them into Notre Dame Bay.

Tides.—It is high water, full and change, in Change Island Tickle at 7h. 20m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

North Tickle, close within the north end of Change Island, has 3 fathoms water in the entrance and 6 feet in the shoalest part; it is open to the NE. and affords no efficient shelter.

Directions.—Coming from seaward, a stranger must not take the channel between Bacalhao Island and Bacalhao Rock, but should pass $\frac{1}{4}$ mile east of the islet, steering South (S. 31° W. mag.) to run between Kiar and Moorham Reefs, to the NE. extreme of Duck Island. When passing the latter island, bring South End Point in line with Smoker Island, bearing S. 31° W. (South mag.), round the latter on its northern side at about 400 yards, and, avoiding

the rock south of Smoker Island, bring the SW. end of Shag Islets in line with the west extreme of Smoker Island, bearing N. 12° W. (N. 19° E. mag.); this mark, kept on astern, will lead east of Farewell Reef, which will be passed when the inner basin of Farewell Harbor is open south of the north side of the harbor, S. 38° W. (S. 69° W. mag.). The SW. point of Dog Bay Islands should then be brought open west of the NW. islet off them, bearing S. 12° E. (S. 19° W. mag.), to clear Dog Reef. There are no further dangers till Vesuvius Rock, at the west entrance of Sir Charles Hamilton Sound, is reached.

Vessels may go through either of the channels between Bacalhao Island and Starve Head, taking care to avoid Clarke Rock, in the channel between the latter and Berry Island.

If passing south of Herring Islands, keep the NE. end of Berry Island open north of Herring Head, bearing N. 85° W. (N. 54° W. mag.), to clear the rock off Red Islet, which will be passed when Tinker Island is well open east of Red Islet, and Duck Island may then be steered for; whence proceed as before directed.

Cape Fogo, the east point of Fogo Island, a bold headland 214 feet above the sea, is 9½ miles WNW. from Offer Wadham Light-house. Fogo Island has rocky and deeply indented shores, affording, however, but indifferent harbors, except for small vessels and boats; it is surrounded by numerous rocks and islets, with many shoals between them.

Tilton Harbor, 3¼ miles NNW. of Cape Fogo, formed by Pigeon Island and peninsula, is open to the north. It can be entered by boats only, as there is but 3 feet water in the entrance over a rocky bottom. On the shores of the harbor is a considerable fishing village, which, with its church, is easily recognized from a short distance.

Ice.—Northern ice usually arrives between 12th and 20th January, closing on the coast with easterly winds. Sometimes the coast may be clear in April; at other times, with a prevalence of northerly winds, all communication is stopped during May, and even up to July.

Hennings Islet, 6 feet above water and 2 miles NNW. of Tilton Harbor, lies 900 yards off shore, with deep water between it and Fogo Island.

Round Head, the NE. point of Fogo Island, 199 feet above the sea, is conspicuous.

Joe Batts Point, 2 miles west of Round Head, is a low shelving point. Joe Batts Arm, west of Joe Batts Point, is so full of rocks as to be difficult for ordinary navigation, though a flourishing fishing village is settled on its shores, and a vessel of 100 tons is annually loaded while moored among the rocks.

Ice.—Reports from Joe Batts Arm give the mean epoch of the arrival of northern ice as 3d January.

Shoal Bay, in the center of the north side of Fogo Island, is $\frac{1}{2}$ mile wide, 3 miles deep, and quite open to the north. Safe summer anchorage may be found in from 8 to 10 fathoms water on the west shore near the head. When proceeding up the bay care must be taken to avoid approaching, in the line of their direction, the islands which run out from the center of the head of the bay and terminate in Steering Island.

Bard Island, at the east point of Shoal Bay, has a considerable village on it, but Bard Cove is only a boat harbor.

Dean Rock, with only one foot water on it, and generally breaking, lies $\frac{1}{2}$ mile North (N. 81° E. mag.) from the NW. extreme of Bard Island, and in the direct line between Joe Batts Point and the entrance of Fogo Harbor. Brimstone Head, seen through Fogo Harbor entrance, bearing S. 60° W. (N. 89° W. mag.), leads north of this rock.

Fogo Harbor is east of a bold rocky peninsula, which forms the NW. extremity of Fogo Island. The intervening coast is broken and rocky, with dangers extending off 200 yards and lying in the fairway to the eastern entrance of the harbor.

Fogo is a town of considerable importance, being the depot for the surrounding fishing districts. In 1891 it had a population of 815.

East of the harbor is Lanes Lookout, a rocky hill 385 feet above the sea and the highest on the island. It falls steeply to the northward a short distance within the coast.

In front of Fogo Harbor are several islands from 50 to 100 feet high, forming narrow entrances difficult of access at all times to a sailing vessel, and unapproachable with the heavy sea which rolls in during and after gales from seaward.

There are two principal channels into the harbor. In the eastern a stranger can not depend upon having more than 9 feet, or in the western channel 19 feet at low water. The harbor affords secure anchorage in from 3 to 7 fathoms water, over mud.

The eastern entrance is between Rags and Simms Islands. North of the former, at 200 yards, is Rags Rock, and off the north point of Simms Island is Simms Rock. Both rocks are under water, but break in a moderate sea.

Nanny Rock, with 4 fathoms water over it, lies 400 yards north of Barnes Island. It breaks in a heavy sea.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls here fortnightly during summer and autumn.

Directions.—Approaching from the eastward, pass outside Dean Rock, with Brimstone Head seen through the entrance of Fogo Harbor, bearing S. 60° W. (N. 89° W. mag.), and when the west side of Bard Island bears southward of S. 2° W. (S. 33° W. mag.) the rock will be passed.

Proceed parallel with the coast until Slade's west house is seen (the house is conspicuous, and with a flagstaff near it is easily recognized) over Pilly Point and Simms Island, bearing S. 49° W. (S. 80° W. mag.), which will lead 100 yards northward of Rags Rock. The rock will be passed when the west extreme of Rags Island bears S. 13° W. (S. 44° W. mag.), when steer for the entrance.

After entering between Rags and Simms Islands, the turn to the west is very sharp, and the channel but 150 yards wide. Care must be taken not to hug Simms Island too close, as a rock, with 6 feet water over it, extends 70 yards south of its east point. Having made the turn, keep the south point of Barnes Island just shut in with Fogo Head, bearing S. 83° W. (N. 66° W. mag.), until Gappy Island opens west of Simms Island, about N. 4° W. (N. 27° E. mag.), then run to the south, keeping Gappy Island in the center of Middle Tickle, N. 4° W. (N. 27° E. mag.), to avoid Pilly Rock on the port hand and Harbor Rock on the starboard, until the west extreme of Barnes Island shuts in with Garrison Point, about N. 56° W. (N. 25° W. mag.), when anchorage may be taken up where convenient.

The western entrance, between Boatswain Island and the cliffs of Fogo Head, is but 100 yards wide, and narrowed by a rock which extends halfway across from Boatswain Island. When entering, Fogo Head must be kept close aboard, and with a heavy sea running there is a considerable rebound from the cliffs. Having passed the entrance, the shores of the islands are bold.

Northward of Garrison Point a bank, with 7 feet water over it, extends halfway across the channel, so that, in passing, the shore of Barnes Island must be kept aboard, and in turning toward the anchorage keep Western Island well open of Garrison Point, bearing N. 63° W. (N. 32° W. mag.), until the summit of Gappy Island is in line with the NE. end of Center Island, seen through Middle Tickle, N. 4° W. (N. 27° E. mag.), which will clear Harbor Rock, and anchorage may be taken up as convenient.

Ice.—Fogo Harbor freezes over usually between the 9th and 19th January and remains so till about the 23d April, the harbor being completely blocked with ice about 2 feet in thickness. Field ice appears about 14th January and disappears between 1st May and 1st June. The first steamer arrives about 30th April and the last mail steamer leaves on 19th January.

Tides.—It is high water, full and change, in Fogo Harbor at 7h. 15m.; springs rise 4½ feet, neaps rise 3 feet.

Dangers.—From 2 to 7 miles from Round Head, and with the head bearing between West (N. 59° W. mag.) and S. 52° W. (S. 83° W. mag.), there are several outlying dangers, named, respectively, the Barracks Islets, Pigeon, Inspector, and Lanes Rocks, all of which are shown on the chart.

Drovers Rock, small, and awash at high water, lies 2 miles N. 9° W. (N. 22° E. mag.) from Round Head.

Cleopatra Rock, reported in 1841 as lying about 12 miles north-eastward from White Island, was (1898) unsuccessfully searched for by Commander W. Tooker, of H. B. M. surveying vessel *Gulnare*, and the fishermen of the locality knew nothing of any rock near the position given.

Snap Rock, awash at low water, is the most dangerous rock in this neighborhood, from its isolation and distance from the land, being 18 miles N. 36° E. (N. 67° E. mag.) from Cape Fogo.

Ireland Rocks, generally breaking in three separate heads, with from 30 to 70 fathoms water close around them, lie about 3½ miles to the northward of The Barracks, and form the northeastern extreme of a belt of islands and rocks which, with an average breadth of 2 miles, run ENE. and WSW. for about 14 miles off the north coast of Fogo. There is a navigable channel between this belt and the coast, and deep-water channels are found among the islands and rocks, but for most of these local knowledge is required.

Bishop Islet, small, and 10 feet above the sea, is the eastern island in this belt; from it shoal ground extends one mile northward and ½ mile eastward.

Cromwell Ledge, about ¼ miles in extent, with irregular, rocky bottom, has two patches of 6 fathoms ½ mile apart North (N. 31° E. mag.). The south patch is 6½ miles S. 60° W. (N. 89° W. mag.) of Snap Rock.

Jacobs Ledge is a patch of small extent, with 5½ fathoms on it, lying 1½ miles N. 59° E. (East mag.) of Ireland (East) Rock.

NOTE.—Both of the above shoals break heavily in bad weather. Other shoals have been reported in this locality, but are considered identical with these; but as the bottom is so foul and irregular, it is quite possible that other rocks may exist.

Little Fogo Islands form a group of islets, the eastern, 136 feet above the sea, being the highest. On the western islet of the main group a few fishermen live, who occupy themselves during the summer at the codfishery, and in winter and spring sealing.

Turr Islands form a group NW. of Little Fogo Islands, the highest being 94 feet above the sea.

Storehouse Island, 140 feet high, lies one mile WSW. from Turr Islands, with a clear channel $\frac{1}{2}$ mile wide between. These two groups of islands are the highest of the belt, and, from their isolation, the most conspicuous. To run through this channel and insure being clear of Lots Rock, off Turr Islands, keep Round Head, on Fogo Island, open west of Mile Islet, bearing S. 27° E. (S. 4° W. mag.). The islets off the highest of the Storehouse Islands are steep-to; when past them care must be taken to give Mile Islet a berth of $\frac{1}{2}$ mile, on account of the shoals which extend 600 yards off it.

Beacon.—There is a pole beacon on Storehouse Island.

Gappy Island, $2\frac{1}{2}$ miles north of the entrance of Fogo Harbor, is conspicuous, being 83 feet high. The intervening groups, namely, Seals Nest, Long Island, East Countryman, West Countryman, and Middle Islets, are from 10 to 30 feet above the sea.

Beacon.—Seals Nest Island has a pole beacon on it.

Dangers.—Between the above-mentioned belt of islets and Fogo Island are numerous sunken dangers, which are shown upon the chart, but it is advisable to obtain the assistance of a local pilot to navigate among them.

Stone Island, the western island of the belt, is small, 12 feet above the sea, and separated by a clear channel $1\frac{1}{2}$ miles wide from Gappy Island.

Black Islet, small, and 12 feet above the sea, lies $1\frac{1}{2}$ miles S. 69° W. (N. 80° W. mag.) from Brimstone Head. A patch, with 4 fathoms water over it, lies $\frac{1}{2}$ mile S. 11° W. (S. 42° W. mag.) of Black Islet.

The dangers around Black Islet extend in a NNE. and SSW. direction, the island being about the center.

Shoal Bay Rock, with 3 fathoms of water over it, lies $\frac{1}{2}$ mile S. 71° W. (N. 78° W. mag.) from Black Islet, and between are two rocks awash at low water.

Current.—A current running from the NW. splits about 2 miles off Fogo Head. The main branch sets close along the north shore of Fogo Island, and among the rocks and islands around it, from $\frac{1}{2}$ to $1\frac{1}{2}$ knots. It is much influenced by the wind, being accelerated by northerly and retarded by southerly winds, while before easterly gales it sometimes runs to the NW. This current, after passing Round Head, takes the direction of the coast, and is influenced by the tidal stream, the ebb accelerating and the flood retarding it, but only occasionally at spring tides stopping its southerly course entirely.

The western branch of this current runs between Change and Fogo Islands at the rate of about half a knot an hour, but is lost before arriving at Stag Harbor Tickle.

The Coast, from Cape Fogo to Seldom Come-by Harbor, trends SW. by W. 8 miles. It is bold and rocky, and indented by three coves, Cape, Kippin, and Wild Coves. They afford no shelter.

Western Head Rock, with 3 fathoms, lies $\frac{1}{4}$ mile southeastward of Western Head, the next headland to Cape Fogo. Burnt Point well open of Wild Point, bearing S. 82° W. (N. 67° W. mag.), clears the rock.

Seldom Come-by Harbor is the first safe anchorage north of Greens Pond, from which it is distant 50 miles; it is consequently a great stopping place for the Labrador fishing fleet on their way north, when detained by foul wind or ice from prosecuting their voyage. In the month of June, under either of these circumstances, it is often crowded with brigs of 150 tons, and smaller vessels with their closely packed living freight of fishermen, women and children; and again in the fall it is much frequented, though not by such large numbers, the prevailing winds being more favorable for the return southern voyage.

The entrance is $\frac{1}{4}$ mile wide between Burnt Point on the east, and Cann Islands and Black Reef on the west. Shoal water extends 300 yards off Burnt Point, but with this exception there are no dangers. Having advanced up the bay so as to have the inner harbor on the west side open, anchorage will be found in 6 fathoms, mud, over a space $\frac{1}{4}$ mile in diameter. The inner harbor is 200 yards wide by 600 yards long, with a depth of 12 feet. There is a considerable village around the shores of the harbor and bay, but no supplies can be obtained, except water.

Light.—On the largest of the Cann Islands, from a light tower above the gable of a wooden dwelling, 39 feet in height, and painted white with red roofs, a fixed white light is exhibited at an elevation of 85 feet, that should be visible 10 miles through an arc of 270° .

Ice.—Seldom Come-by Harbor freezes between 1st and 10th January and remains frozen sometimes till as late as June, and occasionally clearing as early as the middle of February. Field ice usually arrives in the early part of February, sometimes remaining till June.

Tides.—It is high water, full and change, in Seldom Come-by Harbor at 7h. 13m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

Stag Harbor Tickle.—The channel southward of Fogo Island, between it and the mainland, is divided by the Indian Islands and their adjacent islets. The northern channel between these islands and Fogo is Stag Harbor Tickle; the southern is Sir Charles Hamilton Sound. The former, though narrow and intricate, is preferred by coasting vessels.

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Ice.—Stag Harbor Tickle freezes solid in January and breaks up between 1st and 10th May.

Little Seldom Come-by Harbor, lying NW. of Cann Islands, affords good summer anchorage in 6 to 10 fathoms, mud. There are no dangers in approaching it, except the islets west of Cann Islands; from these foul ground extends 300 yards.

Stag Harbor, on the north side of Stag Harbor Tickle and NE. of South Point, is 200 yards wide, and runs generally WNW. $\frac{1}{4}$ mile, the depth shoaling gradually from 5 fathoms to the mud and boulder banks at the head. Being open to the SE. it does not afford convenient shelter.

Grandfather Island is the eastern continuation of the Indian Islands, being separated from them by a rocky channel one mile wide. The island is low and flat, and has a smaller islet 600 yards north of it, from which a reef extends E. by N. nearly $\frac{1}{4}$ mile; between this islet and Cann Islands is the entrance to Stag Harbor Tickle, $2\frac{1}{4}$ miles wide. The north shore of the West Indian Island, which forms the south side of the tickle, is rocky and foul for 800 yards off it.

Indian Island Tickle lies between East and West Indian Islands and affords summer anchorage for small craft in 2 fathoms water, over mud.

Indian Lookout Island is a remarkable cone, 127 feet high, lying $1\frac{1}{4}$ miles west of Stag Harbor Tickle.

Directions.—Care must be taken not to come within $\frac{1}{4}$ mile of the NE. point of West Indian Island; and a good mark for running through the tickle, so as to avoid Stag Rock, off South Point, on the north hand, and the shoals off Indian Island on the south, is to have the north extreme of Mouse Island, the western islet of Cann Islands, in line with the first rise in the hills east of Seldom Come-by, bearing N. 62° E. (S. 87° E. mag.).

When Rogers Point is well open of South Point, bearing N. 46° W. (N. 15° W. mag.), Stag Rock will be passed, and a N. 51° W. (N. 20° W. mag.) course for $1\frac{1}{4}$ miles will lead past Rogers Point and north of Indian Lookout Island. In this channel there are no dangers which are not visible, except a rock awash at low water, which in a very smooth sea might possibly not be seen; it lies 400 yards N. 31° W. (North mag.) from the NE. islet of the Indian Lookout Group.

Watch Rock, which breaks in a moderate sea, lies N. 21° W. (N. 10° E. mag.) $1\frac{1}{4}$ miles from Rogers Point, and in mid-channel between Watch and Fogo Islands.

Island Harbor Head is a small but remarkable bluff, 101 feet high, on the west coast of Fogo Island, $3\frac{1}{4}$ miles north of Indian Lookout Islands. There is an excellent boat harbor on its SE. side.

Hare Bay.—Hare Bay Head is 283 feet above the sea, and S. by W. 2 miles from Brimstone Head. Between them is Hare Bay, easily recognized by Leveret Islands, forming the south side of its entrance, one of which is dome-shaped. A rock, with 9 feet, lies 400 yards north from the end of these islands, leaving a channel $\frac{1}{4}$ mile wide into the harbor. The bay is 2 miles deep, and good anchorage will be found from halfway up, in from 4 to 12 fathoms, mud; the west shore is rocky, but the east clear of danger. A snug anchorage for a small vessel in 2 fathoms will be found in a basin formed between the islands on the western side of the bay and the mainland of Fogo Island.

Tides.—It is high water, full and change, in Hare Bay 7h. 35m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

Sir Charles Hamilton Sound.—The northern shore of Sir Charles Hamilton Sound is formed by the Indian Islands, and groups which extend from them toward the Dog Bay Islands, the intervening space is occupied by dangers, and should not be approached within $\frac{1}{4}$ mile, or in less water than 10 fathoms.

Ice.—Sir Charles Hamilton Sound freezes over in January, east to a curved line from Seldom Come-by Harbor to East Indian, Goose, Grass, and Noggin Islands, and winds north of east fill the sound, winds between SE. and west clearing it. Owing to the current from Cape Fogo past Ladle Island, this part of the coast and the western Wadham Island is often clear of ice.

Rocky Bay.—The entrance to Rocky Bay is 6 miles wide between Rocky Point and Grass Islands, but is broken into four channels by White, Green, and Noggin Islands; between Green and Noggin Islands the passage is foul, with $2\frac{1}{2}$ fathoms over a bottom strewn with boulders. Between Noggin and Grass Islands, and also between Green and White Islands, the channels are clear.

The inner waters of the bay are divided into three arms, the Southwest, Middle, and Northwest; of these the Southwest and Middle Arms are shallow and encumbered with islets and boulders.

Noggin Hill, on the west side of Rocky Bay, wooded and 251 feet high, is conspicuous from its being surrounded by low land.

Northwest Arm has two rocks in its center, a few feet below the water, also a patch of $3\frac{1}{2}$ fathoms midway between Noggin Island and Noggin Hill. In going up this arm keep near its western shore, with the upper points of the eastern shore open, so as to avoid the rocks in the center, and when White Island is shut in with the outer east point of the arm, they will be passed, and anchorage may be had as convenient in 4 to 6 fathoms, mud.

Gander Bay, westward of Rocky Bay, runs inland 13 miles, there receiving the waters of Gander Brook, a considerable fresh-water stream.

Dog Peak is a remarkable sharp peak, 176 feet above the sea, on the west side of Gander Bay; the land to the northward is low, terminating in Dog Point, off which are the Dog Islands, low and rocky. Gander Island is narrow, and with Duck Island SW. of it is 2 miles long; between this and Dog Point is the entrance to Gander Bay.

Fox Island, on the west side of the bay, lying $\frac{1}{4}$ mile from the shore and 5 miles within Dog Point, is of moderate height and easily distinguished; between it and Dog Point the coast recedes to the foot of Dog Peak, forming Shoal Bay, in which are numerous islets and rocks extending $\frac{1}{4}$ mile beyond the line of the points of the bay.

Beaver Hill, on the eastern shore of Gander Bay, directly opposite Fox Island, is 251 feet above the sea.

Storehouse Island, on the east shore opposite Fox Island, is flat, 29 feet high, and $\frac{1}{4}$ mile from the shore; shoal water extends $\frac{1}{4}$ mile SW. from the island, on which is Robinson Rock, awash at low water. The shoalest part of this foul ground lies 900 yards S. 76° W. (N. 73° W. mag.) from the NW. point of Storehouse Island.

Bussey Point is a low promontory on the western shore; shoals, having 15 feet water over them, lie in the direct line between Fox Island and Bussey Point.

In the reach from Bussey Point to Clark Point, when standing toward the eastern shore, Storehouse Island must be kept open of Beaver Point until past the point next above Bussey Point, so as to clear a long shoal which stretches $\frac{1}{4}$ mile off a low point on that coast. A shoal, with $3\frac{1}{4}$ fathoms water over it, lies in mid-channel one mile S. by E. from Bussey Point.

Gander River, flowing out of the lake of the same name, which is 33 miles from the head of the bay, is crossed, at 5 miles below the point where it issues from the lake, by the Northern and Western Railway.

Anchorage.—Safe anchorage will be found in all parts of the bay above Fox Island, on bottom generally of mud.

Ice.—From the mean of eleven years' observations, Gander Bay freezes about 1st January and clears about 1st May.

Tides.—It is high water, full and change, in Gander Bay at 7h. 55m.; springs rise 4 feet, neaps rise 3 feet.

Tidal Stream.—The ebb at Clark Point runs 2 knots at springs, with a very weak flood for about three hours; at neaps there is no flood stream.

Farewell Head, 243 feet above the sea, is the western point of Sir Charles Hamilton Sound, and the termination of the northern shore of Dog Bay, which lies between it and Dog Bay Islands.

Dog Bay runs inland 7 miles; immediately off its entrance are Dog Bay Islands, which extend $2\frac{1}{2}$ miles NNW. and SSE., consisting of three main islands and numerous rocky islets; their general elevation is from 20 to 40 feet, except at the north end of the northern island, where a hill rises 133 feet.

Steering Island, in the center of the entrance to Dog Bay, is small, 27 feet high, and steep-to.

Charley Island lies $\frac{1}{6}$ mile WSW. of Steering Island.

Vesuvius Rock, awash at low water, lies $\frac{1}{4}$ mile N. 53° E. (N. 84° E. mag.) of Steering Island, and the same distance from the nearest shore of Dog Bay Islands.

Gulnare Rock, with less than 6 feet on it, lies 1,400 yards S. 40° E. (S. 9° E. mag.) from Steering Island.

Anchorage may be obtained above Double Islet, in from 4 to 8 fathoms, mud, between the islands and the north shore; between them and the south shore the bottom is foul.

Wadham Islands are seven in number, and with the adjacent dangers cover a space of 11 miles E. by N. and W. by S.; they are named respectively Offer Wadham, Small, Coleman, Peckford, White, Duck, and Copper Islands. On the south they are nearly connected by rocks and reefs with the mainland north of the Penguin Islands.

Light.—On Offer Wadham, the easternmost island, a cylindrical-shaped brick tower, 44 feet in height, and painted red, exhibits, at an elevation of 100 feet, a revolving white light every half minute, which should be visible 12 miles.

Ice.—The northern ice generally arrives between the 10th and 20th January.

Small Island, lying $\frac{1}{4}$ mile southwestward of Offer Wadham Island, is low and flat, 25 feet above the sea.

Coleman Island, the next, is small, with two remarkable cliffs 40 feet high, rising one at the northern and the other at the southern extremity of the island.

Peckford Island is the largest and middle island of the group; at the north end is a sharp peak 86 feet high.

White Island, lying to the northwestward of Peckford Island, is remarkably barren, nearly flat-topped, 99 feet above the sea, and of a white color.

Duck Island is generally low and rocky, with a small peak in its center 69 feet above the sea; it lies to the southwestward of White Island.

Copper Island, the most western, is the highest and most conspicuous of the group, 192 feet above the sea.

Eastsoutheast Ground is a shoal with 9 feet water, lying nearly 2 miles E. by S. of Offer Wadham Island.

WADHAM ISLANDS.

Tom Cod is a small rock, with 12 feet; the marks for it are, the peak of Peckford Island in line with the north cliff of Coleman Island S. 65° W. (N. 84° W. mag.), and Offer Wadham Lighthouse bearing N. 34° W. (N. 3° W. mag.).

Southsouthwest Rock is always to be seen, being awash at high water; it lies 2 miles SSE. from Small Island, and E. by S. from Coleman Island.

East Rock, with 10 fathoms, lies 2 miles N. 65° E. (S. 84° E. mag.) from Offer Wadham Lighthouse.

Outer East Rock, with 12 fathoms, lies 5 miles N. 79° E. (S. 70° E. mag.) from Offer Wadham Lighthouse.

White Clam Rock, with 9 fathoms, lies to the northward of the group, nearly 4 miles N. 28° E. (N. 59° E. mag.) from Copper Island summit.

Frampton Rock, with 3 fathoms, lies 2½ miles N. 79° W. (N. 48° W. mag.) from Copper Island summit.

Fishing Rock, with 9 fathoms, lies 4 miles N. 73° W. (N. 42° W. mag.) from Copper Island summit.

Channels among the Wadham Islands.—Between Peckford Island and the mainland there are several deep-water channels; the widest is that nearest the main, immediately north of Penguin Islands and Edwards Reef, but for this no leading mark can be given. The only channel for which a natural leading mark exists is that between Scrub Reef and Schoolroom Rock; this mark is the south points of Copper and Duck Islands in line N. 61° W. (N. 30° W. mag.). Copper Island, from its greater height, can be seen over Duck Island.

Funk Island, the summit of which is in latitude 49° 45' 29" N., longitude 53° 10' 49" W., lies about 24 miles ENE. from Offer Wadham Island; it is 800 yards long, NE. by E. and SW. by W., by 400 yards wide, 46 feet high and nearly flat, with scanty vegetation; peat on the highest part.

Landing can be effected in calm weather at Gannet Head on the SW. coast, and on the north side of Indian Gulch, which is south of the eastern or Escape Point, but not at the head of this gulch, as at all times the send of the sea would make it unsafe for a boat in such narrow waters. On the north coast, 200 yards west of Escape Point, is a steep cliff, up and down which the sea rises and falls without breaking, so that even in a high sea landing may be effected on The Bench, which is a shelf 4 feet wide, sloping up the cliff, and quickly narrowing to a few inches broad, but keeping that breadth for only 10 or 12 feet, after which the ascent is steep with good holding.

Two islets lie off the west point of Funk Island, at the distances of 1,200 and 600 yards; besides these islets there are several rocky

spots, extending $\frac{1}{2}$ mile off the north side of the island, which are generally breaking.

Caution.—In addition to Brenton Rock, having 5 fathoms water over it and lying $5\frac{1}{2}$ miles S. 59° W. (West mag.), the island may be said to be surrounded by sunken dangers at distances varying from $2\frac{1}{2}$ miles to $\frac{1}{2}$ mile, a knowledge of which can best be obtained from the chart. Although on some of these ledges a depth of as much as 15 fathoms is found, yet, through the sudden change in the depth of water (60 fathoms being the general depth in the vicinity of the island), the sea breaks heavily over them in bad weather.

Current.—It is reported that a strong southwesterly set is sometimes experienced near Funk Island; care should therefore be exercised when navigating in the vicinity, especially at night or during foggy weather.

Tides.—It is high water, full and change, at Funk Islands at 7h.; springs rise from 2 to 3 feet (approximate).

Ladle Island, lying $4\frac{1}{2}$ miles SW. by S. from Copper Island, is 34 feet above the sea, and forms the NW. extreme of the almost straight, low, and dangerous coast which terminates at Cape Freels.

Ragged Harbor is $2\frac{1}{2}$ miles southeastward of Ladle Island; in its entrance is an islet 6 feet above water, and northwestward of the islet are two rocks with less than 6 feet on them. The northernmost rock is distant $\frac{1}{2}$ mile, and there is another rock about 200 yards SSW. of the islet.

Directions.—When to the northward of these rocks bring the fall of a ridge of high land in line with White Point, the first point in on north shore, bearing S. 39° W. (S. 70° W. mag.), and anchor off White Point in 4 fathoms, mud. This would make a good temporary anchorage for small vessels bound south and detained by a SW. gale, instead of bearing up for Seldom Come-by Harbor, on Fogo Island.

Penguin Islands are two low, flat islets about 20 feet above the sea; the northern lies 5 miles SSE. from Peckford Island, the space between being much encumbered with rocks and shoal patches, with two narrow channels through them. Northwest of the islets, between them and Ragged Harbor, lie the extensive patches known as Edwards Reef, on which is a group of small rocks about 10 feet high.

Light.—On the north end of North Penguin Island, from a cylindrical-shaped iron tower, 47 feet in height and painted red and white in vertical stripes, a fixed white light is exhibited at an elevation of 62 feet, which should be visible 9 miles.

Coast.—From abreast the Penguin Islands to Cape Freels the trend of coast is SE. for $16\frac{1}{2}$ miles; the shore is generally low and the country flat, so that when a short distance off there is nothing

remarkable by which to distinguish one part from another. Deadman Rock, with 15 feet water over it, lies $1\frac{1}{2}$ miles N. 8° W. (N. 23° E. mag.) from Deadman Point.

Anchorage.—In Deadman Bay, $6\frac{1}{2}$ miles from South Penguin Island, there is fair anchorage in 9 fathoms water during the summer, with shelter from NW. and south winds, in the NW. corner under Deadman Point; the holding ground is good, but a shoal, on which the depth is 3 fathoms, lies $\frac{1}{2}$ mile S. 8° E. (S. 23° W. mag.) from Deadman Point.

Cat Harbor, southward of Deadman Bay, is small and dangerous, and only available for small vessels in fine weather. A 6-fathom bank off Cat Harbor, and several with depths of from 5 to 9 fathoms off Deadman Bay, break in bad weather.

Ice.—Cat Harbor freezes between 1st January and 1st February, and clears as soon as the ice leaves the coast.

Cape Freels, the northern point of the great bay of Bonavista, is low and rocky, consisting of three points, named North, Middle, and South Bills; within them the land rises to an elevation of 183 feet, known as Cape Ridge.

Ice.—Cape Freels freezes between 1st January and 1st February, and the ice is often near the cape in May and in some seasons as late as June.

Gull Island lies $1\frac{1}{2}$ miles east from the South Bill; there is deep water round this island, but $\frac{1}{2}$ mile N. 56° W. (N. 25° W. mag.) is Gull Rock, with 9 feet over it.

Coast.—About $\frac{1}{2}$ mile SW. from Gull Island commences rocky ground, which extends along the coast for about 13 miles to the SW., as far as Shoe Point. On this rock-encumbered shore there are no anchorages that a stranger should attempt until south of Copper Island, which lies off Shoe Point, when by the aid of a chart anchorage may be found to the westward of Green Pond Island.

Between Gull Island and North Bill there are many offlying dangers, the outer of which, Brandies Islet and Reef, stretches off about $\frac{1}{2}$ mile from Middle Bill, with shoal water and less than 10 fathoms for a distance of $1\frac{1}{2}$ miles; from this there are no dangers in fine weather until past Cat Harbor and Deadman Bay.

The dangers about Cape Freels cover a triangular area, having for its base 13 miles of the coast from Shoe Point to Cape Freels, and its apex at Stinking Banks, which lie about 6 miles from this line of coast. The whole of this space is encumbered with shoals, interspersed with low rocky islets, which make it dangerous of approach, especially during foggy weather, though in a moderate sea fishermen with local experience feel safe, from the fact that almost all the dangers show themselves; but in a heavy swell, when

the deeper shoals with 7 to 10 fathoms over them are breaking, and the whole sea is confused, nothing but the most perfect knowledge and great experience would justify this portion of the coast being approached.

With the aid of a chart and the following remarks and directions, to be used during moderate weather, such as often prevails in summer when fishing vessels are proceeding to the Labrador Coast, sufficient local knowledge may easily be acquired for the ordinary purposes of navigation, and a comparative stranger enabled to use with confidence the outer channels between Flowers and Stinking Islands, and northward, inside Middle and Charge Rocks.

Pincher Island lies 4 miles SW. by S. of Gull Island; a square church on the highest part of the island makes it easy to be recognized. To the northward of the island is Pinchers Bight, which affords safe anchorage in summer for small vessels in $2\frac{1}{2}$ to 3 fathoms.

Pouch Island, which lies about $1\frac{1}{2}$ miles to the southward of Pincher Island, is 80 feet high and about $\frac{1}{4}$ mile long, with several islets and reefs round it; $\frac{1}{4}$ mile from its east side lie East Reefs, the outer rock of which dries, and is consequently always easily recognized.

The entrance to Pinchers Bight from the southward is a mile wide, between East Reefs and Margery Rock, which has less than 6 feet over it and generally breaks.

Directions.—Having recognized Pincher Island church, steer for it, and keep it well open east of Hincks Islet (which is 12 feet high, lying $\frac{1}{4}$ mile N. by E. of Pouch Island), bearing N. 39° W. (N. 8° W. mag.), and having passed the outer rock of East Reef, bring it in line with the east end of Flowers Island, a large island southward of Pouch Island, and steer North (N. 31° E. mag.), with it bearing South (S. 31° W. mag.), for $1\frac{1}{4}$ miles, until Bundells Gaze, a remarkable granite lump on the mainland, is in line with the outer rocks north of Pincher Island, named Pound Rocks, N. 50° W. (N. 19° W. mag.), then steer on this line for $1\frac{1}{4}$ miles, until Pincher Island church bears S. 59° W. (West mag.), when sheer out to pass Pound Rocks, between which and the dangers to the northward the channel is 800 yards wide; having passed them, anchor when convenient.

Ice.—The bays between Pincher Island and Pools Arm all freeze between 1st January and 1st February, and clear as soon as the ice leaves the coast.

Flowers Islands are two in number, with some small islets close off them to the northward; the western is the largest and highest, 103 feet above the sea; together they cover an area $\frac{1}{4}$ mile in diameter. A straight narrow channel, in which the few resident

fishermen secure their boats, runs NW. by W. and SE. by E. between the islands.

Swains Islands lie off the mainland about 4 miles SW. of Pincher Island; on them is a fishing village with a conspicuous square church painted white, with a dark roof. Some sealing vessels are laid up during summer in the channel nearest the mainland; the entrance to this channel or harbor is from the southward, but no written remarks can be given that would be of service.

Butterfly Islands are several narrow rocky islets, lying a little more than a mile SW. by W. of Flowers Islands; they are 500 yards long, west and east, the western and highest being 30 feet above the sea; north of them are two low rocks extending off a distance of 200 yards.

East Twin Rock has 13 feet over it; it lies 1,200 yards west from the Butterfly Islands.

West Twin Rock has 12 feet over it; it lies 900 yards farther west and a mile from Butterfly Islands.

Black Reef is small, about 10 feet high, 800 yards N. by W. of Butterfly Islands, and about one mile W. by S. from the peak of Flowers Islands.

Three Rocks and Jacobs Ground lie $\frac{1}{2}$ mile southward of Flowers Islands, covering a space nearly a mile in diameter, with several shoal heads, with from 9 feet to 5 fathoms over them, and deep water among them.

Shoe Point in line with the north side of Copper Island S. 63° W. (N. 86° W. mag.) leads south of them; Shoe Point in line with the south side of Newell Island, an island lying northward of Copper Island, S. 49° W. (S. 80° W. mag.) leads northwestward of them, while Pouch Island summit in line with the east side of Flowers Island N. 34° W. (N. 3° W. mag.) leads to the eastward, and the main portion of Pouch Island open westward of Flowers Island N. 6° W. (N. 25° E. mag.) leads west of them.

Cabot Islands, also known as Stinking Islands by the fishermen, form the outermost of the low rocky islets which encumber the coast between Cape Freels and Shoe Point; they are two in number, about 400 yards apart, 19 and 22 feet high, respectively, and lie $5\frac{1}{2}$ miles SSE. $\frac{1}{2}$ E. from Gull Island.

A rock, with 6 feet water over it, lies about $\frac{1}{2}$ mile southwestward, and between them and Flowers Islands lie two rocks, named Bleak and Stevensons Islets, the former 8 feet, the latter 14 feet above the sea.

Light.—The lighthouse, on northern Cabot Island, is a tower on a dwelling, 47 feet in height, painted red and white in bands; it exhibits, at an elevation of 74 feet, an intermittent white light, having a period of system of twenty seconds, showing light eleven

seconds, with nine seconds eclipse. It should be visible 10 miles.

Stinking Banks lie from $1\frac{1}{2}$ to 3 miles NE. of Cabot Islands, with depths of from 12 to 16 fathoms between; they cover a space of $1\frac{1}{2}$ miles ENE. and WNW. by $\frac{1}{4}$ mile broad, with patches of from 7 to 9 fathoms water. From the outer patch of 7 fathoms Cabot Island Lighthouse is 3 miles S. 66° W. (N. 83° W. mag.).

Middle Rock, awash at low water, is always breaking; it lies $1\frac{1}{4}$ miles N. 9° W. (N. 22° E. mag.) from Cabot Island Lighthouse.

Charge Rock, with 4 feet water over it, generally breaks; from it Gull Island lies $2\frac{1}{4}$ miles N. 69° W. (N. 38° W. mag.), and Middle Rock is in line with the west end of Cabot Island.

Norris Rock, with 5 fathoms water over it, lies $1\frac{1}{4}$ miles S. 68° E. (S. 37° E. mag.) from Gull Island.

Greens Pond Island, lying about 2 miles from Shoe Point, is 171 feet above the sea, and one mile in diameter, presenting a nearly flat summit. From it a chain of islets extends south $1\frac{1}{4}$ miles, without navigable channels between them; the southern are Copper, Pigeon, and Horse Islands, which are almost connected. Copper Island, the most southern of the group, rises to a peak 115 feet high, and has, lying to the southward at 400 yards distant, Black Rocks and Black Reef, which are steep-to, the water deepening quickly to 100 fathoms. At 300 yards from Horse Island is Horse Rock, with less than 6 feet water over it, and 300 yards from Copper Island is Herring Rock, on which the depth is 12 feet.

Cookroom Rock, with 12 feet water over it, lies 400 yards off the SE. point of Greens Pond Island.

Sealskin Rock, with 15 feet water over it, lies N. 11° E. (N. 42° E. mag.), and another rock, also with 15 feet over it, lies N. 28° E. (N. 59° E. mag.), each 1,100 yards from Puffin Island Lighthouse.

Between Puffin and Cookroom Rocks is the entrance to the fishing town and station of Greens Pond. The church, merchants' establishments, with sealing steamers and vessels which use this harbor moored in the narrow gully between the rocks, render it conspicuous. On no account should the anchorage be approached by a stranger.

During summer months Greens Pond is often without fresh water. The population in 1891 was 1,317.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls here fortnightly during summer and autumn.

Coal.—A small supply of coal (about 20 tons) may be obtained.

Puffin and Newell Islands lie northward of Copper Island. The former, about 1,200 yards from Greens Pond Island, is flat, and 55 feet high. At 300 yards N. 38° E. (N. 69° E. mag.) from

the lighthouse is Puffin Rock, with 12 feet water over it; and 900 yards N. 49° E. (N. 80° E. mag.) from the lighthouse is Puffin Ledge, with 5 fathoms over it. Newell Island, only 38 feet high, is divided from Puffin Island by a narrow rocky channel.

Light.—On Puffin Island, from a slate-roof tower, 40 feet in height, at the corner of a granite building, a fixed red light is exhibited, at an elevation of 85 feet. It should be visible 10 miles between the bearings of S. 22° E. (S. 9° W. mag.) and N. 68° E. (S. 81° E. mag.), over an arc of 270°, but is obscured between Big Pools Island and Fox Island, in Fox Bay.

Ice.—Greens Pond Harbor freezes about the 18th January, between which date and 8th February it is closed at intervals, but after the latter date it is generally completely closed by ice about 2 feet in thickness until 9th March. Field ice appears about 11th March and disappears about the same day in May. The first vessel usually arrives about 28th April and the last leaves about 7th January.

Midsummer Rock.—This dangerous rock, having 2 feet water on it and a depth of 11 fathoms close-to, lies a little more than $\frac{1}{2}$ mile S. 42° W. (S. 73° W. mag.) from the SW. point of Copper Island. The west extreme of Greens Pond open west of Maiden Island, bearing N. 20° W. (N. 11° E. mag.), leads west of the rock.

Anchorage.—Herring and Midsummer Rocks are the only dangers between Copper Island and Shoe Point, so that when clear to the westward of Midsummer Rock vessels may, in fine weather, proceed to an anchorage south of Greens Pond Island, in from 7 to 10 fathoms water.

The anchorage off the SW. side of this island is indifferent, the bottom being chiefly of rock, with some patches of sand, necessitating great care in selecting suitable ground for anchoring. Vessels should ride with a long scope of cable.

Pools Harbor.—The entrance to this harbor is to the northward of Greens Pond, between the islands which stretch north from that island, namely, Partridge, Grassy, and Odd, on the south, and Pools Islands, on the north; it may be recognized by the two Pound Islets, which lie nearly a mile NE. of Greens Pond Island and the same distance from the entrance of the harbor.

South Pound Islet is about 300 yards long and 47 feet high, with shoal water extending 100 yards off it on all sides.

North Pound Islet is small, being about 100 yards in diameter and 30 feet high; a reef, which is generally breaking, extends 400 yards from it, in the direction of South Pound Islet, and 800 yards NE. by E. from it is a patch of 5 fathoms.

Half Rock, with 9 feet over it, lies $\frac{1}{4}$ miles N. 46° E. (N. 77° E. mag.) from North Pound Islet, with the SE. extremes of the Pound Islets and a saddle over Shoe Point all in line.

North Rocks are two in number, with 2 and 3 fathoms water over them; their outer edge lies about one mile ENE. from the east point of Greens Pond Island. The summit of Big Pools Island in line with the east side of South Pound Islet, bearing N. 56° W. (N. 25° W. mag.), clears their east side.

Liver Ledge has 7 fathoms water over it, and from it Copper Island summit is 2½ miles S. 48° W. (S. 79° W. mag.).

Midway Rock, with less than 6 feet water on it, lies directly in the fairway for Pools Harbor, between South Pound Islet and the shoals off Greens Pond Island, and a rock, with 12 feet water over it, lies one-third of the distance from Grassy Island to the SE. point of Big Pools Island; there is also a rock, awash at low water, lying 100 yards northward of Odd Island; besides these there are no dangers in the harbor except those close to the shore or above water.

Benburry Rock, with 9 feet water over it, lies 65 yards S. 36° W. (S. 67° W. mag.) from Benburry Islet, and in the fairway to Pools Harbor.

Directions.—There are no natural leading marks for the channels between Pound Islets, nor for those north or south of them. The best channels are immediately north or south of South Pound Islet, where, in a moderate sea, the dangers would generally show. After passing this islet, steer for Big Pools Island, taking care not to open the church west of it, until the inner part of Grassy Island bears southward of S. 59° W. (West mag.), and, having passed Odd Island, anchor in from 7 to 10 fathoms water, over mud, with the west side of Grassy Island just touching the east side of Odd Island, bearing S. 31° E. (South mag.), and the church N. 59° E. (East mag.).

A slight swell sets in here with easterly gales, but it is not dangerous to shipping. Smooth water may be obtained in a depth of 5 fathoms, ¼ mile farther up the harbor, and small vessels may moor in the channel NW. of Main Pools Island or in Pudding Bag Cove. The favorite moorings for sealing vessels when lying up is between Main Pools and Big Pools Islands.

Ice.—Pools Harbor freezes early in January and breaks up in the latter part of April.

Tides.—It is high water, full and change, in Pools Harbor at 7h. 0m.; springs rise 4 feet, neaps rise 3 feet.

Loo Cove is a good anchorage on the mainland about one mile WNW. of Greens Pond Island. In running for it, when SW. of Greens Pond, there are no dangers until the summit of Copper Island is in line with the SW. extreme of Greens Pond Island, bearing S. 54° E. (S. 23° E. mag.), and this line should not be crossed until Pools Church is well open of Partridge Island, bearing N. 5° E. (N. 36° E. mag.), so as to avoid the ledge which

stretches out nearly one-third of the width of the channel from Greens Pond Island. After passing the narrowest part of the channel (400 yards wide) there is good anchorage in 11 fathoms water for a space of $\frac{1}{2}$ mile.

The NW. side of South Pound Islet in line with the south point of Partridge Island, bearing about N. 70° E. (S. 79° E. mag.), leads between two sunken rocks, 200 yards apart, into Loo Cove, where there is good anchorage in from 5 to 7 fathoms water.

General Directions.—Approaching Greens Pond from the southward, after passing the dangers off Cape Bonavista, a N. 34° W. (N. 3° W. mag.) course for 21 miles if inside, and N. 45° W. (N. 14° W. mag.) 18 miles if outside them, will lead about 4 miles clear of the dangers off Gooseberry Islands; after passing these endeavor to sight land in the vicinity of Shoe Point, for, though not the most prominent point of the coast, there is a chance, should it be foggy, of the fog lifting as it is approached. The only danger near it is Midsummer Rock, and it is scarcely probable that could be approached without Copper Island or the islets off it being first seen.

In clear weather it may be convenient to steer direct for Flowers Islands; in this case Pincher Island church will generally be the first object identified, from its prominent position.

Having recognized the land about Greens Pond, a stranger can have no difficulty in proceeding to the NE., either inside or outside Three Rocks and Jacobs Ground, by keeping Shoe Point and south point of Newell Island in line, bearing S. 49° W. (S. 80° W. mag.), if inside and intending to pass northward of these dangers; if outside, Shoe Point touching the north side of Copper Island, S. 63° W. (N. 86° W. mag.), clears them, passing to the southward, until Pouch Island is open of Flowers Islands, N. 40° W. (N. 9° W. mag.). Should Pincher Island Church be first identified, it may be safely steered for on a N. 31° W. (North mag.) course, until Flowers and the other Islands are recognized, after which, in proceeding to the northward, the channel on either side of Stevensons Islets may be taken.

The passage east of Three Rocks, between Stevensons and Bleak Islets, a mile wide, is the most easy, involving less change of course, the only caution necessary being to avoid the shoal ground which extends nearly 400 yards off the west point of the Bleak Islets. From this channel steer N. 13° E. (N. 44° E. mag.) 3 miles, keeping a good lookout to the northeastward for Middle Rock, which generally breaks, and on the west for Cobblers Fishing Rock; the west summit of Butterfly Islands kept in line with the northern point of Flowers Islands, S. 37° W. (S. 68° W. mag.), will lead between these dangers, but do not pass north of this line until

the Middle Bill of Cape Freels is open of Lapstone Rocks, which lie about one mile southward of Gull Island, bearing about N. 43° W. (N. 12° W. mag.), when a course may be steered for Gull Island, leaving Charge and Norris Rocks to the north, and passing east of Gull Island at 200 yards or any greater distance.

Inside Passage.—After leaving Pools Harbor, and having rounded southward of Big Pools Island, steer N. 48° E. (N. 79° E. mag.), within Pound Islets, taking care to bring South Pound Islet open west of North Pound Islet S. 34° W. (S. 65° W. mag.), so as to avoid Half Rock and The Twins, until Black Reef is in line with the south point of Flowers Islands, East (S. 59° E. mag.), when the before-mentioned line should be crossed and Pound Islets brought in line S. 41° W. (S. 72° W. mag.), to clear Catamaran Rock, an outlying rock eastward of Swains Islands; after passing Flowers Islands, bring Black Reef just open of the islets off Flowers Islands S. 52° W. (S. 83° W. mag.), and proceed between Stevensons and Margery Rocks; after passing these, steer more to the northward, about N. 30° E. (N. 61° E. mag.), keeping a good lookout for Middle Rock to the eastward and Cobblers Fishing Rock to the westward, bringing Butterfly West Islet in line with the north point of Flowers Islands, S. 37° W. (S. 68° W. mag.), which leads between them, but not passing north of that line until Middle Bill is open north of Lapstone Rocks, about N. 43° W. (N. 12° W. mag.), when a course may be steered for Gull Island as before.

These two "runs," inside and outside Flowers Islands, are the only channels that can be used by navigators with scanty knowledge of the coast. Nearer the shore there are others available for those who have great local experience, and through them they do not hesitate to take sealing vessels of 200 to 300 tons, which are so strongly built for contact with ice that a bump on a rock in moderate weather neither hurts the vessel nor disturbs the pilot.

Approaching Bonavista Bay from seaward, the outer points, Cape Freels and Cape Bonavista, are so low that they can not be readily seen in clear weather beyond a distance of 14 miles, and it is necessary to give the dangers off Gooseberry Islands a berth of 3 miles; also advisable for a stranger to make for the north shore of Bonavista Bay, about Greens Pond and Shoe Point, which is comparatively free from dangers. At night, the light on Puffin Island will be a valuable guide.

Bonavista Bay.—Cape Freels and Cape Bonavista, the outer points of this bay, bear from each other N. 23° W. (N. 8° E. mag.) and S. 23° E. (S. 8° W. mag.), distant 36½ miles. Off Cape Bonavista dangers extend 6 miles N. by E., and off the coast from Cape Freels to Shoe Point dangers extend fully 8 miles. From Stinking Banks, off Cape Freels, to Young Harry, off Cape Bonavista, the

course is S. 20° E. (S. 11° W. mag.), 26 miles. The bay is divided into two main branches by a group of islands running in a north-easterly direction, and terminating to seaward in Gooseberry Islands. The northern portion is again divided into two main arms, separated by groups of islands and a portion of the mainland; they both run in about SW. 28 miles, the northern arm terminating in Freshwater Bay, the southern in Bloody Bay. The southern main portion of Bonavista Bay, between Gooseberry Islands and Cape Bonavista, has one principal arm, Clode Sound, which runs in a southwesterly direction 45 miles. Besides this sound there are numerous smaller sounds, bays, and intricate channels, among the archipelago within Gooseberry Islands.

The entrance of the northern portion of Bonavista Bay is 6 miles wide, between Shoe Point and Gooseberry Islands; it then divides into Locker and Cottel Reaches.

Locker Reach commences between Fair Islands and Brandies Rocks; it is 1½ miles wide, its direction SW. for a distance of 11 miles on the north side of Deer and Locker Flat Islands, when it receives the name of Content Reach, continuing the same direction for 5 miles to the entrance of Freshwater Bay. The Brandies and rocks off Deer Islands are the only dangers in these reaches.

Pitt Sound lies between the Deer, Locker Flat, and Pitt Sound Islands, and connects Cottel Reach with Content Reach.

Light.—On the extreme of Cape Bonavista, from a square house, 36 feet in height, painted red and white in vertical stripes, with the lantern in the center of roof, is exhibited, at an elevation of 150 feet, a revolving light, with a period of revolution of ninety seconds, showing one red and two white phases alternately, with an interval of thirty seconds between each phase; it should be visible 15 miles, but the light is reported to have been seen at a much greater distance—the white light at 30 miles and the red at 19 miles; thus at the longer distance the light would appear as a revolving white light.

Owing to the short duration of the light, and the fact of each alternate flash being red, thereby reducing the intensity, Bonavista light is found to be difficult of recognition.

Ice.—Bonavista Harbors freeze over at intervals between 20th January and 20th March, and are closed at intervals by ice about a foot in thickness from the former date to 15th May. Field ice appears about 15th February and disappears toward the end of May. Coasters frequent the harbors all the year round, but foreign vessels only between about 1st May and 20th December.

Shoe Point, 2 miles west of Greens Pond Island, is flat and of small elevation, but the hills rise steeply to 214 feet; the coast trends westerly for 1½ miles to New Harbor.

New Harbor may be recognized by a remarkable cliffy hill 200 feet high on its west side, and by two low islets east of its entrance; the entrance is 100 yards wide; the harbor, extending 1,200 yards N. by W., increases in width to 200 yards. There are a few small rocks close off its west shore, but with the exception of these it is free from dangers, with good anchorage in from 4 to 5 fathoms water, over mud.

Indian Bay is formed by the continuation of the shore from New Harbor on the north, and on the south by Silver Fox and Brown Fox Islands, and the coast in continuation of them. It runs west for 8 miles, where it branches NW. for a mile and SW. for a mile.

Cat Island, on the north shore of Indian Bay, is 3 miles from New Harbor. It is a mile long in the direction of the coast, and rises to a cone 214 feet high at its east end. Immediately east of it is a small islet 6 feet high, with a rock close east of it, and rocks between it and Cat Island.

Camel Island is small and lies close west of Cat Island.

Cat Cove, NE. of Cat Island, is a favorite shelter with wind-bound sealing vessels. The anchorage is in 7 to 13 fathoms, and the only dangers in approaching it are the islet and rock last mentioned off Cat Island; these must be left on the port hand in entering, as there is no safe channel between them and Cat Island.

Silver Fox Island is $1\frac{1}{2}$ miles long east and west by $\frac{1}{2}$ mile wide. Its coast is cliffy and surface broken. It is divided into two portions by a deep valley; the eastern is the higher, being 271 feet above the sea.

Rocks with shoal water extend 100 yards off the NW. point of Silver Fox Island into Indian Bay, and off its SE. side are several islets with rocks among them, but steep-to on their sea face.

Brown Fox Island is a mile long east and west by $\frac{1}{2}$ mile wide. It is bold and rocky, and separated by a channel $\frac{1}{2}$ mile wide from Silver Fox Island.

A patch of 4 fathoms lies $\frac{1}{2}$ mile north of Brown Fox Island, and a patch of 5 fathoms 300 yards off the center of the north shore of the same island.

Outmans Island is 77 feet high, $\frac{1}{2}$ mile long by about $\frac{1}{2}$ mile wide. It is separated by a rocky channel of $\frac{1}{2}$ mile from Brown Fox Island, and by a channel of $\frac{1}{2}$ mile from the mainland SW. of it, and on the north by the main channel of Indian Bay, $\frac{1}{2}$ mile wide from Camel Island.

Ship Island is the largest of a group which extends two-thirds across Indian Bay from its north shore. It is a mile west of Camel Island.

North Arm is east of Ship Island, and in it is good anchorage in 4 to 13 fathoms, mud.

The Channel between the Ship Island Group and the south shore of Indian P y is 600 yards wide, with a depth of $4\frac{1}{2}$ fathoms in mid-channel, 6 fathoms near the shore, and 7 fathoms near the south island of the group.

Fair Islands are a barren group, consisting of many dome-shaped isolated granite hills, varying in height from the low eastern islets to 300 feet. Immediately within the eastern island there is moderately good anchorage for small vessels. The southern entrance is the best. It is 100 yards wide, with a rock awash at low water, spring tides, off the eastern point; therefore it is requisite to keep on the west shore when going in. The anchorage is in 6 fathoms water, off the houses on the eastern island.

Pork island, the most westerly of the Fair Islands, forms the north side of the entrance to Trinity Bay.

Ice.—From a mean of 19 years' observation, Fair Island Anchorage freezes about 11th of January and clears about 13th April.

Lewis Island is on the north side of Locker Reach. Near the center of its south coast, a remarkable hill rises steeply from the sea 456 feet, having on its summit several conspicuous boulders. Frying-pan Island, immediately under this hill, and 200 yards from the shore, is dome-shaped, 149 feet high, with a clear channel between it and Lewis Island.

Trinity Bay is formed by Lewis Island and the mainland north and west of it. In the eastern entrance, midway between the Fair and Lewis Islands, are Southwest and Saint Islands.

Southwest Island is small, 52 feet high, steep-to on the south side, but rocks and shoal water extend 400 yards off both the east and west ends.

Saint Island is $\frac{1}{2}$ mile W. by S. of Southwest Island. It is 119 feet high, $\frac{1}{2}$ mile long west and east by 300 yards wide. Immediately off the east point is a rock, and its west end is foul to the distance of 300 yards. A rock, with less than 6 feet over it, lies N. 11° E. (N. 41° E. mag.) of Saint Island; to avoid it, keep the south point of Fair Islands open of the south point of Pork Island, bearing N. 78° E. (S. 72° E. mag.).

Ice.—Northern ice arrives about 5th March and remains until about 25th April, and Trinity Bay is usually covered with locally-formed ice during February and March. The Northwest Arm is generally frozen about the end of January or beginning of February, and clear about the middle of March; the Southwest Arm freezes regularly from the middle of January to the middle of May.

Drake Cove is SW. of Drake Island; it affords fair anchorage in 7 to 10 fathoms. Its north shore is ragged, and rocks extend from the north point in the line of its direction to nearly mid-channel between it and Drake Island; the south shore is steep bare rock, the face of a rounded granite hill, the summit of which is strewn with boulders.

Trinity Gut, the southern entrance of Trinity Bay, is $\frac{1}{2}$ mile long by 400 yards wide; there are some rocks off its SW. shore, with 7 to 12 fathoms in mid-channel, free from dangers.

From Trinity Gut the coast is steep and straight, trending SW. $2\frac{1}{2}$ miles to Chalky Cove, which affords a convenient temporary anchorage for small vessels windbound; the depth is 4 to 10 fathoms, rocky bottom; a rock, with one foot over it, lies 450 yards off its west point.

Locker Bay is west of Chalky Cove; the entrance is $\frac{1}{2}$ mile wide between that cove and Pincher Island; the outer part has an average breadth of $\frac{1}{2}$ mile, with a depth of 20 to 30 fathoms. Above Birchy Head is convenient anchorage in 6 to 12 fathoms, mud. South of Birchy Head is an arm 1,600 yards long by 300 yards wide, having a depth of 7 fathoms, mud.

Locker Rock, awash at low water, is in the middle of the entrance of Locker Bay. Frying-pan Island entirely open of Chalky Head, bearing N. 58° E. (N. 88° E. mag.), clears it passing to the southward, and entirely shut in, N. 62° E. (S. 88° E. mag.), passing to the northward.

Hare Bay, south of Shoal Bay, on the NW. side of Content Reach, has Hare Island, 198 feet high, in the entrance; the channels on either side of it are free from dangers, but the shores of the bay are low and rocky, and should not be approached nearer than 400 yards; there is good anchorage in from 4 to 18 fathoms water, over mud, with Hare Island bearing East (S. 60° E. mag.).

Freshwater Bay.—The entrance of this bay is $\frac{1}{2}$ mile wide, with Hen Islands near the center, dividing it into two channels. The northern is shoal, and should only be used by small vessels; the southern channel is free from dangers, except a small shoal, on which the depth is 4 fathoms, extending 200 yards S. by E. of East Hen Island.

Benmans Island, $1\frac{1}{2}$ miles from Hen Islands, lies 300 yards from the south shore; between it and the entrance the coast is rocky and shoal, and should not be approached.

Mussel Bank covers 3 feet at high water, and lies 150 yards north of Benmans Island.

Butchers Cove, immediately within the entrance of Freshwater Bay, on the north shore, extends NNE. for one mile, with a width

of 800 yards, the depth in the center being from 4 to 13 fathoms, over mud; to enter it, the bank off the south point must be avoided.

Doctors Island, $1\frac{1}{4}$ miles SW. of Benmans Island, and 800 yards from the south shore, is small and 25 feet high; the intermediate coast is rocky, and should not be approached within the line of the islands.

Traverse Island, on the northern shore, is small, 15 feet high, and situated at the outer edge of a rocky bank which stretches from the north shore; shoal water extends $\frac{1}{4}$ mile in an easterly direction from the island, but only 200 yards into the channel of the bay.

Air Island, near the center of Freshwater Bay, is 75 feet high, with the main channel south of it, and the south shore is free from dangers, but off its north and east coasts rocky islets, with shoal water, extend 600 yards.

North of Air Island there is a depth of 3 fathoms water, but the shores are rocky, and a stranger should not attempt that passage. Gambo Brook, at the head of Freshwater Bay, has 6 feet over the bar at low water, with 2 fathoms within.

On the right bank of Gambo Brook there is a steam sawmill, and on the left bank of a stream, which falls into the brook at 3 miles above this mill, there is a water mill, the two being connected by a tramway.

Communication.—There is a railway station at Gambo, and communication by the Northern and Western Railway with St. Johns, distant $192\frac{1}{4}$ miles; the railway crosses the Gambo River by a steel bridge, 80 yards long, with piers of solid masonry.

Tides.—It is high water, full and change, in Freshwater Bay at 7h. 30m.; springs rise 4 feet, neaps rise 3 feet.

Tidal Streams.—In the entrance to Freshwater Bay the ebb runs nearly one knot an hour, but the flood stream is weak.

Cat Bay is at the head of Content Reach. The entrance narrows to 100 yards at the inner end, where the depth is $3\frac{1}{4}$ fathoms. The bay then turns to the northeastward round Ballast Cliff.

A rock, with 3 feet water over it, lies in the center 800 yards from Ballast Cliff Point.

Tidal Stream.—In the narrows, at the entrance, the ebb stream runs $1\frac{1}{4}$ knots an hour, and the flood nearly one knot.

Offer Gooseberry Island, 118 feet high, appears as a treble-peaked island. It is the outer and most conspicuous of a group of rocks and islands on the south of Bloody Bay and Reach, and lies $6\frac{1}{4}$ miles south of Copper Island.

North Brown Islets, 15 feet high, lie $\frac{1}{4}$ mile east of Offer Gooseberry Island, and South Brown Islets, 4 feet high, lie one mile SE. by E. $\frac{1}{4}$ E. from the same island.

Offer Rock is awash, and consequently can generally be seen. It lies about $1\frac{1}{2}$ miles N. 78° E. (S. 72° E. mag.) from the south extreme of Offer Gooseberry Island.

Shark Rock breaks in a moderate sea, and lies $2\frac{1}{2}$ miles N. 75° E. (S. 75° E. mag.) from the south extreme of Offer Gooseberry Island.

Middle Rocks are two, one awash; the other, 400 yards NE. from it, has 9 feet water over it. They lie $1\frac{1}{2}$ miles S. 32° E. (S. 2° E. mag.) from Offer Gooseberry Island.

Those above enumerated are the outer dangers off Offer Gooseberry Island, and can only be safely avoided by giving that island a berth of fully 3 miles.

Inner Gooseberry Islands, flat and 120 feet high, lie 4 miles in a SW. direction from Offer Gooseberry Island. The intervening space is so encumbered with rocks and shoals that it can not be safely navigated, except by the fishermen who fish about the locality. They have a village on Inner Gooseberry Islands, but there is no good harbor for a stranger.

Malone Rock, together with the ledge, covers a space of a mile in a NNW. and SSE. direction. The islet, 2 feet above water, is at the north end, and lies $4\frac{1}{2}$ miles S. 17° E. (S. 13° W. mag.) from Offer Gooseberry Island.

Mole Cove, on the NE. end of Cottel Island, affords fair anchorage, and is easy of approach from the north by keeping Hare Out Point, the west point of the cove, well open of a remarkable conical rock on the NW. point of the largest Inner Gooseberry Island, bearing S. 44° W. (S. 74° W. mag.), to avoid the dangers between the Inner and Offer Gooseberry Islands, passing to the northwestward; and having given Inner Gooseberry Islands a fair berth, keep Offer Gooseberry Island open north of them, bearing about N. 60° E. (East mag.), until Hunch Island is seen between the NE. point of Cottel Island and the treble-peaked island close off it, S. 54° E. (S. 24° E. mag.), when steer in, giving Hair Cut Point and the island off it a fair berth, and anchor as convenient in from 5 to 9 fathoms water, remembering that the bottom is rocky.

Tides.—It is high water, full and change, in Mole Cove at 7h. 37m.; springs rise $3\frac{1}{2}$ feet, neaps rise $1\frac{1}{2}$ feet.

Deer Islands divide Pitt Sound on their south from Locker Reach on the north. They are flat, about 100 feet high, and mostly covered with stunted brushwood. The south and west shores are bold and free from dangers, but east of them are numerous dangers.

Angel Head is the eastern point of Deer Islands. On the coast, $\frac{1}{2}$ mile north of it, is the Popple Stone, a conspicuous white boulder.

The Brandies are the outer dangers off Deer Islands; they all break in a moderate sea. From them Burnt Island, the nearest point of the Deer Islands, is $2\frac{1}{2}$ miles S. 55° W. (S. 85° W. mag.).

The south point of Locker Bay, open of Deer End (the west point of the Deer Islands), bearing S. 64° W. (N. 86° W. mag.), leads NW.; and the summit of Brown Fox Island well open of the east Fair Islands, bearing about N. 49° W. (N. 19° W. mag.), leads east of them.

Burnt Island Rock, which is generally breaking, lies $\frac{1}{2}$ mile N. 64° E. (S. 26° E. mag.) from Burnt Island.

Brag Rock, generally breaking, lies $\frac{1}{2}$ mile N. 41° E. (N. 71° E. mag.) from the Popple Stone. A patch, on which the depth is 12 feet, lies $\frac{1}{2}$ mile in a northeasterly direction from the breaking rock.

Shag Islands lie one mile SW. from Angel Head and $\frac{1}{2}$ mile from the shore of the Deer Islands. They are small, and Deer Shag, the western, is 35 feet high. They are steep-to on the outer side.

Pitt Sound Island, 4 miles in length by about one mile in width, is $1\frac{1}{2}$ miles south of Deer Islands. Its wooded hills rise 474 feet steep from the coast.

Man-of-war Rock, 5 feet high, lies 300 yards off the NW. coast of Pitt Sound Island and $1\frac{1}{2}$ miles from the NE. point. At $\frac{1}{2}$ mile SW. of it, on the shore of Pitt Sound Island, are Pitt Sound Gates, so named from the weathering out of white quartz on the black rock of the island having the appearance of enormous gates.

Locker Flat Island, 3 miles long, about $\frac{1}{2}$ mile wide and 40 feet high, lies opposite the entrance to Locker Bay on the south side of Locker Reach. The shores are of shelving rock, and should not be approached nearer than $\frac{1}{2}$ mile.

Isis Cove, Great Content, and Little Content are at the head of Pitt Sound, on the mainland south of Locker Flat Island. They are open to the north and afford no shelter.

Content Islet, off Great Content, is 22 feet high, steep-to on the NE., but connected by a reef with the east point of Isis Cove.

Lakeman Islands are SW. of Pitt Sound Island, separated by Lakeman Reach, which joins Bloody Reach on the south to Pitt Sound north of them.

A rock, with 6 feet water over it, lies nearly midway across from Lakeman Islands to Pitt Sound Island.

Dog Cove, on the mainland SW. of Lakeman Islands, affords good anchorage for a small vessel. To enter it, the north shore must be approached closely to avoid a reef which stretches more than halfway across from the islands on the south side. A stranger should approach the cove by the north side of Lakeman Burnt Islands.

Cottel Reach commences from the sea between the Gooseberry and Deer Islands. It continues between Pitt Sound and Lakeman Islands on the north and Cottel Island on the south, when it receives the name of Bloody Reach or The Cowpath, and ends in Bloody Bay.

Bloody Reach or The Cowpath, at its entrance between Lakeman and Cottel Islands, is 700 yards wide, but narrowed to 400 yards by shoal water which stretches off from Cottel Reach. The reach is free from dangers for $1\frac{1}{2}$ miles, at which distance on the north side are White Islets, off which shoal water extends 400 yards eastward. There is a 3-fathom patch off the tickle SW. of Cottel Island.

Martin Shepherd Islands are two in number, on the east side of The Cowpath, SW. of Cottel Island; shoal water extends 300 yards off the northeastern island into The Cowpath. Between the northeastern island and Cottel Island is a clear channel, but it must be remembered that the 3-fathom patch before mentioned lies directly off this channel.

Between the two Martin Shepherd Islands is a channel having 3 fathoms water on the east, and 8 fathoms water on the west side. In passing through, remember that the SW. island is connected with Indian Lookout Island by a bar of 9 feet water.

Broad Island is on the east side of The Cowpath, in continuation of the line of Martin Shepherd Islands; between it and the SW. Martin Shepherd Islands is a clear channel.

Mouse Island, 63 feet high, is in the middle of The Cowpath, $2\frac{1}{2}$ miles south of Lakeman Islands.

Bloody Point, on the east side of The Cowpath, is a steep bluff rising to 346 feet, SW. of Broad Island.

Beaches Head, its highest point 271 feet above the sea, is on the west side of The Cowpath, $\frac{3}{4}$ mile SW. of Lakeman Islands. It is named from the beaches which connect the three steep hills of which it is composed. North of the highest is Beaches Cove, small and free from dangers, with anchorage in 3 fathoms water, within Woody Islets on the south side of the entrance, which islets have a clear channel on either side of them.

Rocky Bay, west of Beaches Head, extends 4 miles in a westerly direction; at $2\frac{1}{2}$ miles within Beaches Head its entrance is $\frac{1}{2}$ mile wide, with Rocky Islands on the south side; this entrance is narrowed to 400 yards by Shag Islet, a small dry rock with a reef 300 yards east from it on the north, and on the south side a reef 400 yards long east and west.

Black Duck Island, $\frac{1}{2}$ mile within Shag Islet, has a small dry rock off its west point. North of the island is Black Duck Cove, with a depth of 11 fathoms, over mud; it is rocky, and should not be used by a stranger.

Bard Islands, on its south side, are low and rocky, and a reef stretches off 400 yards northward from the east end of the eastern island. Beaches Head in line with Shag Islet, bearing N. 66° E. (S. 84° E. mag.), leads north of it; when the island bears S. 32° E. (S. 2° E. mag.) a vessel is west of it, and may steer down past Bard Islands and anchor to the westward of them in from 9 to 13 fathoms water.

Bloody Bay.—Wolf Island, 153 feet high, is the west point of the west shore of The Cowpath; from it Northwest Arm of Bloody Bay extends 3 miles in a westerly direction; the outer part is free from hidden dangers, but shoal water extends off the shores to 200 yards beyond the outer points, and 3 to 5 fathoms off the mouth of Norton Cove, which is at the inner end of the south shore. The west continuation of the arm, for a farther distance of 2 miles, has 2½ fathoms water in the entrance; within it deepens to 8 fathoms.

Linton Rock, in the center of Northwest Arm, is 3 feet above high water.

Middle Arm is 400 yards wide for one mile in a SW. direction, when it opens out to a bay 3 miles long by 1½ miles wide; the depth gradually decreases from 20 fathoms to the shore at the head.

There is a rock, just covered at high water, 600 yards from the north shore, and 1½ miles within the bay.

Northeast Arm is in continuation of the direction of The Cowpath, east of Middle Arm; it is shoal 300 yards from either shore. There is anchorage, in less than 10 fathoms water, ¾ mile within the entrance, the depth decreasing rather quickly to the shoal entrance of an extensive arm of the sea, only navigable for boats at high water.

Saint Rock, with 12 feet water over it, is the outer danger off the entrance to Willis Reach. From it the summit (234 feet) of Black Island bears N. 75° W. (S. 75° W. mag.), the nearest part of the island being distant 2½ miles.

Saturday Ledge has 4 fathoms water on its shoalest part, and lies ¾ mile N. 77° W. (N. 47° W. mag.) from Saint Rock.

Flat Islands, SW. of Black Island, have deep water between them, but the rocks which extend off their southern extremities make them dangerous for a stranger to approach. The Flat Islands extend over a space 2½ miles NW. and SE. by ½ mile wide, east of Willis Island. They are from 80 to 140 feet high, and have a general flat appearance; they are the residence of a few fishermen, whose huts are scattered over the center islands of the group.

Bessy Island, 284 feet high, appearing as a large rounded woody hill, is the largest of the group of islands lying east of Willis

Island. There are no convenient anchorages among these islands, and the channels among them should not be attempted without a pilot.

Shoals extend 2 miles southeastward of Black Island and one mile southeastward of Flat Islands; they are cleared passing to the southward, by keeping Baker Loaf Island open of Ship Island, bearing S. 50° W. (S. 80° W. mag.).

Morris Island, 279 feet high, lies one mile south of Willis Island, and is the western and largest of a group which extends 3 miles east from it, terminating seaward in Ship Island, a cone 257 feet above the sea. From its isolation this is a conspicuous object when entering Bonavista Bay.

(H. O. Chart No. 1102.)

Cow Head, 2½ miles south of Ship Island, is a steep, bold cliff, 479 feet high, with the high land behind it, of which Gerrards Hill, the highest, 629 feet above the sea, is conspicuous from the entrance of Bonavista Bay, and forms the dividing head between the entrances to its northern and southern arms.

Bishops Harbor, SE. of Cow Head and SW. of Shag Islands, is 400 yards in diameter, with 5 fathoms water, over rocky bottom. The entrance is between rocks which extend across the mouth of the harbor, leaving a passage of 50 yards wide, with a depth of 18 feet. In ordinary weather this passage is safe, but with a heavy sea it must not be attempted, and at no time by a stranger. There is a fishing population around this harbor.

Little Denier Island, ½ mile long NE. and SW. by 300 yards wide, and 278 feet above the sea, lies off the harbors east of Gerrards Hill; a line of rocks and shoal water extends off either end of the island.

Light.—On the summit of Little Denier Island, from a cylindrical iron tower, 24 feet in height, painted red and white in vertical stripes, a revolving white light every 30 seconds is exhibited, at an elevation of 298 feet. The light should be visible in clear weather from a distance of 19 miles, but is obscured by a chimney, at a distance of 1½ miles, on a N. 77° W. (N. 47° W. mag.) bearing.

Offer Rock, awash and always breaking, lies nearly a mile N. 50° E. (N. 80° E. mag.) from Little Denier Island Lighthouse. Tilley's Hill open south of Little Denier Island, bearing N. 55° E. (N. 85° E. mag.), leads SE.; Hammer Head open west of Little Denier Island, S. 41° W. (S. 71° W. mag.), leads NW., and the cliff at the north point of Cow Head over the SW. end of SW. Shag Island, West (N. 60° W. mag.), leads north of it.

Middle Rock, with 9 feet water over it, and Inner Rock, which has 5 feet over it, lie between Offer Rock and Little Denier Island.

Broomclose Harbor is at its entrance 400 yards wide, but a reef of 12 feet water, over which the sea breaks heavily, extends 600 yards east from the north head, and narrows the channel to 250 yards.

Barrow Harbor is SW. of Little Denier Island; its south head is formed by Richards Island, 289 feet high, which is a large flat mound, steep to the eastward.

From Pulpit Head, the north point of Richards Island, a reef extends in a NE. direction $\frac{1}{4}$ mile toward Little Denier Island; Outer Brandy Rock, at the outer end, has 5 feet water over it. The NE. end of Shag Islands in line with the SW. end of Little Denier Island, bearing N. 17° W. (N. 13° E. mag.), leads east of it. No mark can be given to lead between Outer Brandy Rock and the shoal water off Little Denier Island; therefore this channel into Barrow Harbor must not be taken by a stranger.

The depth is so great and the shelter so indifferent that Barrow Harbor can not be recommended.

Ice.—Bishops, Barrow, and Sailors Harbors freeze over in the middle of January, and the ice generally breaks up in April.

Tides.—It is high water, full and change, in Barrow Harbor at 6h. 13m.; springs rise $4\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet.

Sailors Harbor, SW. of Cow Head, is formed by several islands on the north, which extend west from Cow Head, and on the south by Gerrards Hill, 629 feet high. It is one mile NE. and SW. by $\frac{1}{4}$ mile wide, with anchorage in from 7 to 10 fathoms water, over rocky bottom.

The entrance is about 200 yards wide and barely 200 yards from the mainland; between it and Seal Rock in the center is a 10-foot patch, from which Seal Rock is in line with the west end of Sailors Island, bearing N. 10° E. (N. 40° E. mag.). When entering, the left fall of the SW. Shag Island in line with a conspicuous house, bearing N. 58° E. (N. 88° E. mag.), leads through in $3\frac{1}{2}$ fathoms water. This mark also leads clear of a shoal, with 6 feet water over it, which lies off the first point on the south side within the entrance.

Bakers Loaf Island, 234 feet high, and cliffy, lies $1\frac{1}{2}$ miles NW. from Sailors Island; between them is the entrance to Salvage Bay, which extends 4 miles in a southwesterly direction, with 22 fathoms in the entrance, gradually shoaling to the head, where there is fair anchorage during summer, in 5 fathoms water, over sand.

Bakers Loaf Rocks extend 900 yards in a southerly direction from the island; the outer patch has 9 feet water over it.

Damnabale Bay, SW. of Bakers Loaf Island, extends $2\frac{1}{2}$ miles in a southwesterly direction; the outer part is deep, but among the islets at the head is a moderate depth, but no convenient harbor.

Morris Channel, stretching $5\frac{1}{2}$ miles in a NW. direction to The Cowpath, is between Bakers Loaf and Morris Islands; in the entrance are two islands, Brown Store, on the south, 68 feet high, and Athwart Island, 83 feet high.

A rock, with 7 feet water over it, lies 100 yards S. 2° W. (S. 32° W. mag.) from the Coffee Pot, an islet at the SW. point of Morris Island, and another rock, on which the depth is 9 feet, lies 800 yards S. 13° W. (S. 43° W. mag.) from the same islet.

Bruce Cove Rock, with 5 feet water over it, lies $\frac{1}{4}$ mile N. 69° E. (S. 81° E. mag.) from Bruce Cove Gull Island. It has deep water around it, but the channel north of it is the wider; so Tinker Island should be approached closely in passing.

Fair and False Bay is on the SW. side of Morris Channel, and with the arms north of it extends 4 miles from the line of coast. Squid Island, $1\frac{1}{2}$ miles SW. of Morris Island, forms the south entrance point. From it the coast, like the island, low, broken, and rocky, trends into the bay 2 miles in a southwesterly direction. The depth of water in the bay is from 10 to 22 fathoms. The west side is formed by several islands extending as far as Bloody Point. The channels among them are narrow and generally free from dangers. Middle Reach, the southern, stretches one mile west, with a breadth of 200 yards, and then opens out to a basin $\frac{1}{4}$ mile in diameter, with a depth of 13 fathoms, over mud. Three shoal arms branch off from it south and west.

Middle Reach is separated by a rocky channel from Long Reach, which latter extends in a NE. direction to immediately south of Bloody Point. Long Reach is 200 yards wide, and in mid-channel is free from danger.

Pretty Island, $\frac{1}{4}$ mile west from Squid Island, shelters Bloomer Harbor, the outer part of which is 600 yards wide, with 13 fathoms water, over mud. The inner part has an entrance 300 yards wide; within it widens to more than 400 yards, with 8 fathoms, over mud.

Varket Channel is between Willis and Flat Islands on the north, and Morris and the islands extending to Ship Island on the south; its length is 5 miles to where it joins Willis Reach on the north and Morris Channel on the south.

Ship Rock, in the entrance of Varket Channel, has 4 feet water over it, and lies $\frac{1}{4}$ mile N. 44° E. (N. 74° E. mag.) from Ship Island. Bakers Loaf Island open south of Ship Island, bearing S. 50° W. (S. 80° W. mag.), leads south of all dangers.

Varket Island, small, and composed of two cones 70 feet high, has a sunken rock 50 yards off its west point. A rock, which dries one foot at low water, spring tides, lies 400 yards off the NE. point of Morris Island, and a rock, awash at high water, lies 1,600 yards S. 80° W. (N. 70° W. mag.) from Varket Island. North of this latter rock is a shoal with 3 fathoms water over it.

Willis Reach, north of Willis Island, is 6 miles long from its entrance between Black and Gulch Islands, with a general south-westerly trend. There are no dangers in the fairway through the reach; the depth is 100 fathoms in the NE. end, shoaling to 8 and 10 fathoms at the SW., where it branches into numerous channels leading into the Cowpath, Morris, and Varket Channels. These branching channels are shoal, and should not be attempted without a pilot.

Newman Sound is between the high land stretching SW. of Hammer Head on the north, and on the south the Long Islands and the land stretching NW. to Mount Stamford. Near the center of the sound is Swale Island, $4\frac{1}{2}$ miles long and about a mile at its broadest part.

Halfway Islet is 18 feet high, 300 yards from the north shore of Newman Sound and 4 miles within Richards Island. The coast between them is cliffy and steep-to.

Sandy Cove, one mile west of Halfway Islet, is an open bay $\frac{1}{2}$ mile wide, with a depth of from 5 to 10 fathoms, over sand.

Holbrook Head, 3 miles west of Halfway Islet, being a salient point of the coast, is easily recognized.

Happy Adventure Bays, west of Sandy Cove, are small and of no value as an anchorage, being too narrow except for large boats.

North Broad Cove is one mile west of Holbrook Head. A rock that dries one foot at low water, spring tides, lies nearly 200 yards from its east head, and another rock, with 9 feet water over it, lies in the center of the cove. The depth of water is from 13 to 29 fathoms, the former being found when close to the shore at the head. From the great depth it can not be recommended as an anchorage.

Coast.—From North Broad Cove the coast trends one mile in a SW. direction to Shag Islet, which is 10 feet high; Hall Rock, which covers at half tide, lies one mile SW. of Shag Islet and nearly 400 yards from the shore.

Cold East Rock dries one foot, and lies $\frac{1}{2}$ mile N. 32° W. (N. 2° W. mag.) from the SW. point of Swale Island; the NE. point of Swale Island, even of its NW. coast, bearing N. 69° E. (S. 81° E. mag.), leads north of it.

Several islands extend $1\frac{1}{2}$ miles SW. from Swale Island and from Swale Tickle; between Swale Island, and the islet next SW. of it, is a channel 100 yards wide, with $4\frac{1}{2}$ fathoms water in it. White Islets lie $\frac{1}{2}$ mile south from the SW. end of Swale Island.

South Broad Cove, on the south side of Newman Sound, and west of Swale Tickle, extends one mile south and is 400 yards wide; the depth decreases gradually from 20 to 3 fathoms, over mud; it is a good anchorage.

A rock that covers 2 feet, lies 100 yards off shore, $\frac{1}{4}$ mile within the east head.

Minchin Head, a cone 148 feet high, is $\frac{3}{4}$ mile west of South Broad Cove, and at $1\frac{1}{4}$ miles farther in the same direction is Mount Stamford, which rises steeply from the sea to a height of 658 feet, and with Park Harbor and Ochre Pit Hills, which lie between it and Clode Sound, are conspicuous objects from seaward; north of Mount Stamford the channel between it and Buckley Point is 400 yards wide; west of it the sound continues in a SW. direction with a breadth of $\frac{3}{4}$ mile, for $2\frac{1}{4}$ miles, where it receives the water of a considerable stream; the depth is from 20 to 29 fathoms for 2 miles, when it quickly shoals.

Buckley Cove, west of Buckley Point, extends nearly $\frac{1}{4}$ mile north and has convenient anchorage in 4 fathoms water.

Caution is necessary when seeking an anchorage in the west part of Newman Sound, as the water shoals rapidly within a depth of 15 fathoms. H. B. M. corvette *Druid* anchored in 6 fathoms water, over mud, and at 200 yards nearer the head of the sound there was only a depth of 20 feet.

Long Islands are a group of four, extending 5 miles WSW. and ENE.

Puttick Rock, with 4 fathoms water over it, lies 700 yards north from the north point of Long Island.

Chappel Tickle, the first channel from the east among Long Islands, is rocky and only available for small vessels.

Middle Tickle is short and narrow, but free from dangers, except close to the shore on the east side, and a patch, with 9 feet water over it, 400 yards to the south on the same side.

Long Tickle, the western channel among Long Islands, is narrow and rocky.

Hurloc Head, a steep bluff 230 feet high, west of Long Islands, is separated from them by a short channel $\frac{1}{4}$ mile wide and clear of dangers.

Copper Island lies $\frac{3}{4}$ mile NE. from Hurloc Head; it is 120 feet high, and steep all round.

Clode Sound.—Chandler Reach, the entrance to Clode Sound, is between Long Islands and Chance Islet; from this it extends 10 miles in a southwesterly direction, where it is divided, by Connecting Point, into Goose Bay on the east and Clode Sound on the west.

The Narrows, nearly 11 miles west of Connecting Point, are $\frac{1}{4}$ mile wide; they are formed by shoal water and two islets 12 and 8 feet high, stretching out from the south shore, leaving a clear passage, with 8 fathoms water, along the north shore.

After passing the Narrows the depth in the center of the basin is too great for anchorage; the south shore is steep-to; the north shore is broken and rocky, with dangers extending fully $\frac{1}{4}$ mile off it.

Anchorage.—Good anchorage will be found near the head of the sound in from 3 to 15 fathoms water, the most convenient being near the north shore, off the south point of Northwest Arm, which is at the extreme of the north shore and is very shoal. There is a settlement at Port Blandford, and the land surrounding it is being rapidly brought under cultivation. The streams in the vicinity are well stocked with salmon and trout, and there are also some fine mussel and clam beds.

Communication.—There is communication by rail with St. Johns, distant 154½ miles.

Ice.—Between Clode Sound and Salvage Bay, the deep arms and bays generally freeze in the middle of December and break up about 15th April.

Tides.—It is high water, full and change, in Clode Sound at 7h. 37m.; springs rise 4½ feet, neaps rise 2½ feet.

Lions Den, on the west side of Chandler Reach, stretching 4 miles in a westerly direction from Hurloc Head, is very rocky and entirely unfit for anchorage.

Minchin Island, ½ mile off the north shore at the south end of Chandler Reach, is rocky all round, flat-topped, 83 feet high, and conspicuous both from Chandler Reach and Clode Sound. At ¼ mile west of Minchin Island is Ashley Baker Island; between them the coast is broken and rocky; temporary anchorage, in 8 fathoms water, will be found between these islands in fine weather; the bottom as well as the coast is rocky and broken.

Bread and Dumpling Coves are both rocky, and afford anchorage, in 4 fathoms water, between the line of their outer points, on a bottom strewn with bowlders.

Anchorage.—Bryans Hole Point is on the north shore of Clode Sound, 3½ miles south of Ochre Pit Hill; there is anchorage on either side of this point. Love Cove, on the south side of the sound, 1½ miles below the Narrows, affords anchorage in 8 fathoms water, and Bunyan Cove, a mile to the eastward, has anchorage in 3½ fathoms.

From Bunyan Cove to Pudding Cove, the east sides of Clode Sound and Chandler Reach are steep-to and affords no anchorage.

Deer Island, 310 feet high, is on the east side of Chandler Reach; between it and the shore is a narrow channel with 6 fathoms water.

Pudding Cove, south of a small island one mile to the southward of Deer Island, is 200 yards in diameter with 4 fathoms water, over mud, and is a good watering place.

Goose Bay is entirely free from dangers, except close to the shore and within the line of the points of its bays, which are all shoal and rocky. Within ¼ mile of Goose Head (a bluff on the

south side of the bay) there is 14 fathoms water, and from this to the head, a distance of 2 miles, there is good anchorage.

Tides.—It is high water, full and change, in Goose Bay at 7h. 22m.; springs rise $4\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet.

Sweet Bay extends 8 miles in a southerly direction from Chance Head, and at $3\frac{1}{2}$ miles within the entrance it divides into two parts, named Northwest and Southwest Arms. At the heads of both of them there is anchorage, in from 10 to 16 fathoms water; between the arms the land is rugged, the highest point is Nut Hill, 600 feet high, which is a conspicuous object from the sea between Long Islands and Western Head. In continuation of this dividing land to the NE. are Hunt, Gooseberry, and Hay Islands, the latter small and 46 feet high; they are all steep-to. Rocks extend 200 yards off the east shore of the Southwest Arm, immediately opposite Hay Islet, and a rock which covers 3 feet lies immediately opposite Hay Island, 300 yards from the west shore of Northwest Arm; these are the only dangers in the upper arms of Sweet Bay.

Chance Islet, 35 feet high, lies $\frac{1}{2}$ mile north of Chance Head. Chance Harbor Ledge, with 5 feet water over it, lies $\frac{1}{2}$ mile N. 67° E. (S. 83° E. mag.) from Chance Islet.

Great Chance Harbor, the first inlet on the west side of Sweet Bay, stretches 3 miles in a southwesterly direction and is 300 yards wide, with depths of from 10 to 16 fathoms, over mud. The north shore is steep. The southern side of the entrance is formed by Woody and Mustard Gull Islands, the latter being the outer or eastern. In continuation of the line of these islands is Brines Rock, which has 2 feet over it at high water. After passing it there are no dangers in Great Chance Harbor.

Little Chance Harbor, south of Great Chance Harbor, extends one mile in a southwesterly direction, having a breadth of 200 yards; the head then opens out to nearly 400 yards wide with depths of from 10 to 12 fathoms.

Gull Island, 46 feet high, is one mile within Cutler Head, and 800 yards from the shore; close south of it is Turfpook Island, a cone 165 feet high; sunken dangers lie $\frac{1}{2}$ mile SW. of Turfpook Island.

Cutler Head is a cone 397 feet high, $3\frac{1}{2}$ miles NW. from Plate Cove Head; between is the entrance to Southward Bay, which stretches $9\frac{1}{2}$ miles in a southerly direction.

Cutler Harbor is south of Cutler Head; its entrance is rocky and narrow and should not be attempted without a pilot; a stranger should keep Chance Islet open of Cutler Head, bearing N. 54° W. (N. 24° W. mag.), to be well clear of all danger.

Southward Bay Head is a steep bluff 328 feet high, on the west side of Southward Bay; north of it is Kate Harbor, with a rock in the entrance and no anchorage.

Seal Cove, on the SE. side of Southward Bay, is small and has anchorage in 4 fathoms water. The south side of the cove is rocky; there are a few fishermen's houses on its shores.

Indian Arm on the east side of Southward Bay, 3 miles south of Plate Cove, has a small fishing village around its shores, but no convenient anchorage.

Plate Cove, $\frac{1}{2}$ mile wide, extends one mile south, and affords good anchorage, in from 5 to 10 fathoms water, in the east corner, and fair anchorage in the south corner. There is a considerable fishing village on its shores, and supplies can be obtained in small quantities.

Water.—Water may be obtained; the watering place is conveniently situated in the east corner, and easily approached by boats.

Coast.—From Plate Cove the coast trends $3\frac{1}{2}$ miles in a north direction to Arch Cliff Point; between is Open Hole, a shallow bay with a considerable fishing village on the shores; it affords no anchorage.

Red Cliff Island, one mile south of Arch Cliff Point, and 300 yards off shore, is 50 feet high, and conspicuous from the red and yellow rocks of which it is composed.

Ice.—Open Hole and Red Cliff Island freeze about the middle of February and clear between the end of March and end of April, according to the season; northern ice generally arrives about the middle of February and leaves about the middle of April.

Coast.—From Arch Cliff Point the coast trends NNE. for $3\frac{1}{2}$ miles to Western Head. Off Tickle Cove, north of Arch Cliff Point, the coast is low and ragged, with rocks extending 400 yards; it is then steep-to and bold. Tickle Cove is a fishing village without any harbor, and rocks extend 400 yards off Arch Cliff Point.

Western Rock, a small pointed rock 2 feet above water, lies nearly 800 yards S. 48° W. (S. 78° W. mag.) from Arch Cliff Point.

Western Head is a bold barren promontory, steep-to on both sides, and rising to 443 feet above high water. East of it Deep Cove stretches south for one mile; the cove is open and the south shore foul.

The rocks, having depths of from 7 to 10 fathoms over them, which lie around Western Head at the distance of about 2 miles, cause a confused sea in heavy weather; at times the sea breaks over them.

Bacon Bone Rock has 4 feet water over it, with 3 fathoms at 300 yards NW.; it lies $1\frac{1}{2}$ miles S. 64° W. (N. 86° W. mag.) from Western Head and $\frac{1}{2}$ mile from the nearest shore; Southern Head, open of Western Head, bearing S. 79° E. (S. 49° E. mag.), leads north; Deer Island, shut in with Long Islands, S. 60° W. (West

mag.), leads NW., and Arrow Point, open of Red Cliff Island, S. 3° E. (S. 27° W. mag.), leads west of it.

Coast.—From Western Head to Southern Head, a steep cliff rising to hill 532 feet high, is 3½ miles, E. by S.; the intervening coast, much indented, has rocky ground extending ½ mile off it, nor should it be approached nearer than to have the eastern hill of Swale Island open of Western Head, bearing S. 86° W. (N. 64° W. mag.).

Castle and Keels Coves are encumbered by rocks, and afford only a summer resort for fishing vessels; Keels is a considerable fishing village.

Ice.—Keels and Broad Coves fill in with northern ice and freeze while the ice remains on the coast.

Backside Cove, immediately west of Southern Head, affords no shelter.

Cary Rock, with 12 feet water over it, is the outer danger off Keels; it lies ½ mile N. 28° E. (N. 58° E. mag.) from Keels East Head.

Black Head Bay, west of Cape Bonavista, is clear of danger; some small open bays have a few scattered inhabitants, but afford no shelter for ships.

Ice.—Black Head Bay fills in with northern ice and clears when the ice leaves the coast.

Broad Head is a bluff, 317 feet high, with a front ¾ mile NNW. and SSE., separating Broad Cove and village, which is immediately south of the Southern Head, from Kings Cove.

Kings Cove is small, 700 yards long NE. and SW., shoaling gradually from a depth of 20 fathoms at the entrance, which is 300 yards wide, to the beach, 150 yards wide at the head. It is open to the NE., but said to be a safe anchorage for small vessels; as the water shoals suddenly they do not drag inshore, but at times drift to sea.

Light.—On Kings Cove Head, the northern side of the entrance, a cylindrical iron tower, 37 feet in height and painted white, exhibits at an elevation of 176 feet an intermittent white light, visible 24 times every minute, which should be seen 14 miles, but being unwatched it is unreliable.

Communication.—The Coastal Steamship Company's steamer, between St. Johns and Battle Harbor, calls fortnightly at Kings Cove during summer and autumn.

Tides.—It is high water, full and change, in Kings Cove at 7h. 15m.; springs rise 3½ feet, neaps rise 2½ feet.

Coast.—The coast from Black Head, on the east shore of the bay, to Green Island, trends in a NE. direction for 5 miles, and between are three small bays, viz, Bonavista, Bailey Cove, and Red Cove.

Bonavista is the most southern, and the only one affording anchorage, the others being encumbered by rocks and more exposed. A stranger bound for Bonavista should not approach the shore nearer than to have a small portion of Gull Island just seen west of Green Island, bearing N. 37° E. (N. 67° E. mag.), until Squarey Islet bears S. 30° E. (South mag.); then passing close to the latter islet to avoid a shoal with 3½ fathoms water over it, which lies nearly 200 yards SW. of it, anchorage may be obtained in 6 fathoms water, but this bay is only available for vessels during summer. Squarey Islet is 43 feet high, and the outer of a ridge of rocks forming the north side of the bay.

The town of Bonavista is the largest in the bay, having in 1891 a population of 3,550; there is excellent land, a large quantity of which is under cultivation, around the bay.

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls at Bonavista fortnightly during summer and autumn; there is also telegraphic communication with all parts.

Tides.—It is high water, full and change, off Bonavista at 7h. 25m.; springs rise 3½ feet, neaps rise 2½ feet.

Green Island, on the west side of Cape Bonavista, is 69 feet high, and separated from the land of the cape by a channel 300 yards wide, having 2 fathoms water in the deepest part, eastward of a rock nearly in mid-channel.

Storck Island, 40 feet high, lies about a mile west of Green Island, the channel between being one mile wide, and clear of danger.

Cape Bonavista and Light.—See page 409.

Aspect of Coast.—From the eastward the most remarkable feature north of the entrance to Trinity Bay is Burnt Ridge, some table land situated 500 feet above the sea, 4 miles south of Cape Bonavista; it is nearly 100 feet higher than the land in its immediate vicinity, and 300 feet above the general elevation both north and south of it. As the land is approached, Largent Hill, north of it, becomes visible, then Norther Head, and lastly Cape Bonavista lighthouse and Gull Island which lies off it. From the NE., Green Ridge, which is the north part of Burnt Ridge, will probably be the first land seen; but if cloudy, Cape Bonavista Lighthouse, which may be seen from a distance of 14 miles, will be the first object recognized.

Harrys Ground to the north of Cape Bonavista is more than 2½ miles in length in a SSW. and NNE. direction, and 1½ miles in breadth. It consists of several rocky patches with from 7 feet to 16 fathoms water over, and 20 to 30 fathoms between them; within

$\frac{1}{2}$ mile of the north, east, and west sides of the bank there is a depth of from 50 to 60 fathoms.

Old Harry, the southern rock of Harrys Ground, has 7 feet water on it, and lies 4 miles N. 5° W. (N. 25° E. mag.) from Cape Bonavista Lighthouse. Young Harry, the northern rock, has a depth of 4 fathoms on it, and lies N. 5° E. (N. 35° E. mag.), $6\frac{1}{4}$ miles from the lighthouse. Kelp Rock, with 15 feet water on it, and Middle Rock, with 3 fathoms on it, lie between them. There is also a patch, named Eastern Rock, on which the depth is 7 fathoms; Old and Young Harry, also Kelp Rock, break.

Cape Bonavista Lighthouse, bearing S. 25° W. (S. 55° W. mag.), leads eastward of these dangers; and the same lighthouse, S. 11° E. (S. 19° W. mag.), leads westward. In foggy weather, should the position of the vessel be well known, close with Gull Island, as there are no dangers in the immediate vicinity of Cape Bonavista to affect a ship in moderate weather, the Old Harry being 3 miles from Gull Island.

Note.—Rocks, with less than 5 fathoms water on them, break with a moderate sea, those from 5 to 10 fathoms break with a heavy sea, and those with 10 to 15 fathoms break after heavy gales from seaward.

Gull Island, 117 feet high, lies 1,200 yards off Cape Bonavista. A rock, with 12 feet water on it, lies 200 yards SW. from the island, and another, with less than 6 feet on it, 400 yards west of the cape, but close to the shore.

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CHAPTER IX.

NEWFOUNDLAND, EAST COAST—CAPE BONA VISTA TO CAPE RACE.

(H. O. Chart No. 1102.)

Cape Largent.—From Cape Bonavista to Spillers Point, a distance of 2½ miles, the coast is of cliff, indented with several small bays, which afford no anchorage. Spillers Point is a flat-topped cliff, with several remarkably small but high detached rocks off it, the highest being 121 feet above the sea. Cape Largent, a mile farther SE., is a shelving point, with the extremity cut off from the main part of the land by a deep rent, and at a short distance off it is a small rock just above water. Largent Hill inland from this point is 433 feet above the sea, and remarkable, being separated from Burnt Ridge by a deep valley and rising more than 200 feet above the flat cliffs of the coast.

Bird Island Cove.—A mile south of Cape Largent is Bird Island Cove, affording no shelter, but it is a good station, from whence cod-fishing in boats may be carried on. Temporary anchorage may be obtained in about 7 fathoms water, over sand, at the head of the cove, but within 400 yards of the shore; it is stated that, on account of the backwash, a vessel may ride at this anchorage securely, even in easterly winds.

North Bird Island is small, 124 feet high, and lies 1½ miles SSE. of Cape Largent. South Bird Island is also small, 130 feet high, and is ½ mile S. by E. of North Bird Island. Flowers Point is 4 miles from Cape Largent; the coast between this latter point and North Head, 3 miles to the southward, is flat, with steep cliffs, forming a bay ½ mile deep.

Dollarman Bank.—The coast from Cape Bonavista southward is bordered by an irregular rocky bank, considered a good fishing ground, and from a depth of 20 fathoms at the NE. extremity of Dollarman Bank, 5½ miles E. ½ S. from Cape Bonavista Lighthouse, to 6½ miles off North Head, are numerous rocks, with 6 to 10 fathoms, and deep water close around them, on which the sea breaks after an easterly gale; consequently in bad weather it is advisable to pass eastward of the Haypooks, the outer danger.

This shore is fringed by dangerous rocks, the outer, named Flowers Rock, with less than 6 feet water, lying nearly ½ mile from the shore. Cape Bonavista Lighthouse, bearing N. 42° W.

(N. 12° W. mag.), open North of Cape Largent, until Green Island lighthouse opens south of Catalina North Head, S. 36° W. (S. 66° W. mag.), leads clear of these shoals.

(H. O. Chart No. 380.)

Little Catalina, a boat harbor, is entered west of Cuckold Head, a bold bluff, off which are two islets $1\frac{1}{4}$ miles westward of North Head, the intermediate coast having 5 fathoms water at $\frac{1}{4}$ mile distant. Rowland Head is the termination of the line of coast west of Little Catalina, and forms the east shore of a small cove with a beach of shingle. A low islet lies close off this head. Pigeon Rock, small and low, lies 100 yards off shore NE. of Shepherd Point, and a shoal, with 10 feet water, is situated 250 yards NE. from Pigeon Rock.

Catalina Harbor, entered SW. a little more than $2\frac{1}{4}$ miles from North Head, is dangerous of approach, and should not be attempted by a stranger, but may be readily recognized by the lighthouse on Green Island that lies just south of the entrance.

The entrance to Catalina Harbor, between Shepherd Point on the North and Burnt Point on the south, is barely 700 yards wide, and Charlton Rock, with 6 feet water over it, lies nearly in mid-channel; farther in, the entrance is narrowed to about 200 yards by shoals, with $2\frac{1}{2}$ and 2 fathoms water over them, lying nearly 300 yards in a south and east direction respectively from Goodland Point; and on the south shore by White and Lowe Rocks, the former with a depth of 4 feet, and the latter with 2 fathoms water over it; they lie about 200 yards distant in a NE. and NW. direction respectively from the turning point into Southeast Cove.

Shoals.—Off this harbor shoals extend $8\frac{1}{4}$ miles NE. by E., most of which break after heavy easterly gales, and render the harbor difficult to approach on those occasions. The Haypooks, with 6 fathoms water, lies $7\frac{1}{4}$ miles NE. by E. from Green Island Lighthouse, and the outer shoal, with 8 fathoms water, $\frac{1}{4}$ mile farther in the same direction. The Skerries, with 6 fathoms, lies 6 miles off NE. by E. Feather Shoal, with 6 fathoms, E. by S. nearly 4 miles; Joe Rock with 8 fathoms, nearly East $3\frac{1}{4}$ miles; Soldier Rock, with 9 fathoms, ENE. $\frac{1}{4}$ E. $3\frac{1}{4}$ miles nearly; and Murphy Rock, with 8 fathoms, NE. by E. $2\frac{3}{4}$ miles from Green Island Lighthouse. Poor Shoal, a mile in length within the line of 5 fathoms, lying NE. and SW., is situated between one and 2 miles NE. of Green Island Lighthouse, and has 22 feet least water, on which the sea breaks heavily in easterly gales.

Brandies Shoal consists of three heads, with 4 feet least water, occupying a space 1,300 yards long north and south and about $\frac{1}{4}$ mile wide. The channel between the SW. extreme of Brandies

Shoal and Green Island is 350 yards wide; and that between the north extreme and the mainland is $\frac{1}{2}$ mile wide.

Green Island, south of the entrance, is rugged and rocky. Shoal water surrounds this island, extending 400 yards from the north, 800 yards from the south side, and 200 yards in all other directions.

Light.—On Green Island a wooden dwelling, painted white, with lantern in the center, 41 feet in height, exhibits at an elevation of 92 feet a fixed white light that should be visible 11 miles between the bearings of S. 35° W. (S. 65° W. mag.) and N. 12° E. (N. 42° E. mag.) over an arc of 157°.

Fog Signal.—During thick or foggy weather, a fog horn will be sounded for periods of five seconds, with intervals of silence of thirty-seven seconds.

Communication.—The Coastal Steamship Company's steamer, between St. Johns and Battle Harbor, calls at Catalina fortnightly in summer and autumn; there is also telegraphic communication with all parts.

Coal.—A small quantity of coal (about 20 tons) may be obtained.

Pilots.—The fishermen are trustworthy pilots, and are nearly always to be found near the harbor in daytime.

Burnt Point is terminated by a low black islet about 10 feet high, and from it shoal water extends 100 yards. From it the south shore of the harbor trends to the westward $\frac{1}{2}$ mile, and then doubles back to form Southeast Cove, 400 yards deep, and shallow.

Northeast Arm is $\frac{1}{2}$ mile long, but is barred at 800 yards from the entrance, and a rock, with 3 feet water, lies 250 yards SW. of the bar. It affords anchorage for vessels drawing 9 feet water in a basin 400 yards in diameter, with 2 fathoms, mud.

Southwest Arm is $\frac{1}{2}$ mile long and $\frac{1}{2}$ mile wide at the entrance, narrowing gradually to the head, from which shoal water extends 600 yards; the anchorage here is in 4 fathoms, mud.

Large vessels should anchor off the mouth of this arm in 5 fathoms, mud, taking care to have the east extreme of Northeast Arm open west of Manuel Islet, bearing N. 3° E. (N. 33° E. mag.), to clear Lowe Rock. A swell sets into the harbor and up Southwest Arm after heavy gales, but not sufficient to endanger vessels.

Ice.—The Northeast Arm of Catalina Harbor freezes over about 1st January, from which date to the middle of April it is generally completely closed; winds from SSW. or SW. often break the ice up. Northern ice is irregular in its arrival, seldom appearing before 15th January, often not before 10th February; it generally leaves between 10th and 20th April, but has been known to remain as late as 10th June.

Tides.—It is high water, full and change, in Catalina Harbor at 7h.; springs rise 6 feet, neaps rise 4 feet.

Directions.—To enter Catalina Harbor between the SW. extreme of Brandies Shoal—which generally breaks—and Green Island: After clearing the outer dangers, steer in with Burnt Point in line with a church on the shore of the Northeast Arm bearing N. 69° W. (N. 39° W. mag.) until Green Island Lighthouse bears S. 58° W. (S. 88° W. mag.), then steer about N. 55° W. (N. 25° W. mag.) and, after rounding Burnt Point at about 200 yards to pass south of Charlton Rock, keep the Wesleyan Chapel (situated on the slope of the hill SW. of Courage Point) a little more than its own breadth open west of the house on the rising ground behind it, bearing S. 85° W. (N. 65° W. mag.) to pass between Lowe Rock and the shoal off Goodland Point.

When entering north of Brandies Shoal, the Roman Catholic church in Southwest Arm is not readily distinguished by a stranger, as it is almost hidden by houses; there is, however, a square white house situated about 300 yards southward of the church which, kept almost in line with both Goodland and Shepherd Points, bearing about S. 58° W. (S. 88° W. mag.), is a good mark for passing northward of Brandies Shoal. When South Head is shut in by Green Island Lighthouse, bearing S. 5° W. (S. 35° W. mag.), steer towards Burnt Point until Manuel Islet is wholly open of Goodland Point, N. 82° W. (N. 52° W. mag.), and proceed as before.

Caution.—As before stated, this harbor should not be attempted by a stranger.

Ragged Harbor, a boat cove nearly 2 miles SSW. of Green Island, is sheltered by Ragged Islands, a group of rugged rocks 40 feet high, from which sunken rocks extend in all directions. Morris Rock, the eastern of these, with 22 feet least water, is nearly a mile SSE. from Green Island Lighthouse. Burnt Point, open north of Green Island, N. 45° W. (N. 15° W. mag.), leads east, and Doughfig Point, well open of South Head, bearing S. 36° W. (S. 66° W. mag.), leads SE. of this shoal.

South Head is a wedge-shaped point 130 feet above high water, steep-to on the south side.

(H. O. Chart No. 1102.)

Low Point is a rugged shelving point 4 miles from South Head, with detached rocks and a rock with 6 feet on it 200 yards off. Low Point Grounds are two patches of 13 and 12 fathoms, lying ESE. 1,200 yards, and SE. by E. one mile from the point.

Coast.—The coast between South Head and Low Point consists of a series of low bluffs facing tablelands, backed by a long range

of hills about 600 feet above high water, SW. termination of which, Norther Point, is a steep bluff 580 feet high, a conspicuous object in entering Trinity Bay. This coast is foul, and should not be approached nearer than 800 yards.

To clear all these dangers Bonaventure Head should be kept open of Horse Chops, bearing S. 62° W. (N. 89° W. mag.), until Green Island Lighthouse is open of South Head, N. 7° E. (N. 36° E. mag.).

White Ground, with least water of 3 fathoms, lies 400 yards off Norther Point.

Green Point is wedge-shaped, and divides Norther Cove on the north from Green Bay on the south. Green Point Rock, with 4 fathoms, lies 600 yards from this point.

Western Head, the south point of Green Bay, is a steep cliff, north of which are two waterfalls. Off this head lie Western Head Grounds, two patches of 4 and 9 fathoms, the latter and outer distant 700 yards.

Horse Chops is an overhanging cliff, sloping from a saddle-shaped hill 265 feet high, having off it close to the shore a detached islet, Flat Rock, 6 feet above high water.

Trinity Bay, having its entrance about 40 miles to the northward of St. Johns Harbor, is extensive, and has many good anchorages on either side. The entrance is 15 miles wide, between Grates Point on the south and Horse Chops on the north, thence the bay trends SW. by S. for 50 miles to its head.

Caution.—In bad weather, at night, or in a heavy sea, a stranger should not approach nearer than 7 miles northward or eastward of Cape Bonavista, nor the land as far south as Catalina; after easterly winds a strong current runs up Trinity Bay along the northern shore, and the fog hangs more over this coast than the opposite shore of the bay.

Ice.—Trinity Bay never freezes over, but field ice has been met with in December and has continued off the mouth of the bay until May. Icebergs come up the bay as early as the last week in May and some remain until the last week in August, but these latter icebergs are generally grounded; otherwise with favorable winds the bay would be clear by the end of June.

(H. O. Chart No. 543.)

Trinity Harbor, between Horse Chops and Bonaventure Head, is considered one of the best and largest in Newfoundland; it is surrounded by hills ranging from 200 to 380 feet above the sea. A high rocky irregular peninsula extends from the SW. side of the harbor, dividing it into two portions, named Northwest and Southwest Arms, in each of which are several small bays and coves.

On the SE. part of the peninsula are scattered the houses comprising the town, which has about 2,000 inhabitants, and along the shore are several wharves.

Supplies may be procured here.

Light.—From a wooden tower, 43 feet in height, and painted white, situated 150 yards south of Fort Point, a fixed white light is exhibited, at an elevation of 75 feet, that should be visible 10 miles.

Communication.—The Coastal Steamship Company's steamer, between St. Johns and Battle Harbor, calls fortnightly at Trinity Harbor during summer and autumn.

Directions.—On the eastern shore and $\frac{1}{4}$ mile within Skerwink Head are Herring Rocks, between which and Admiral Island, 20 feet high, about the narrowest part of the entrance, the distance is $\frac{1}{4}$ mile. When entering the harbor, keep in mid-channel, giving Mussel Rock, with 8 feet water over it, the position of which may be seen by the discolored water over it, a good berth, and anchor where convenient.

Ice.—Trinity Harbor freezes over about 31st January, and is closed at intervals by ice, about $1\frac{1}{4}$ feet in thickness, from that date to about 29th April. Field ice appears about 19th April, leaving about 29th of the same month; the earliest date of a vessel arriving is 5th March, and latest of leaving 21st January. A SW. wind blowing for twenty-four hours clears the harbor sufficiently for vessels to enter. Between Horse Chops and Skerwink Head there is often a straight edge of ice, and, if SE. winds prevail, the ice in the bight outside Trinity Harbor is held in for some time, but northerly or NW. winds clear it out.

Tides.—It is high water, full and change, in Trinity Harbor at 7h. 10m.; springs rise 4 feet, neaps 2 feet.

Robinhood Bay.—Skerwink Head, the eastern point of entrance to Trinity Harbor, forms also the western point of Robinhood Bay, the entrance to which is a mile wide, and the bay extends northward $1\frac{1}{4}$ miles, narrowing toward the head. Here vessels frequently anchor to fish, in 7 to 17 fathoms water. Skerwink Rocks, 40 feet high, are off the head of the same name, and Fox Rock, with 15 feet water on it, lies 300 yards south of Fox Head on the east side of entrance.

Salmon Cove, east of Robinhood Bay, is separated from it by Fox Head, the land of which is connected to the main at the head of the bay by a narrow sandy neck. Salmon Cove is considered a good fishing place, and its shores are bold.

(H. O. Chart No. 1103.)

Bonaventure Head, the north point of entrance to Smith Sound, is a bold bluff 537 feet high, and skirted on the south by several

cliffy rocks. Ragged Islands, on the south side of the main entrance to Smith Sound, are a group covering a space of 1,200 yards long east and west, by 300 yards broad; they are 115 feet high, with a ragged and barren appearance, and their NE. extreme is $2\frac{1}{4}$ miles SW. from the south side of Bonaventure Head.

Ragged Rock, on the south side of Ragged Islands, dries 2 feet at low water springs.

Smith Sound is 26 miles in length from Bonaventure Head to the bar at its head, which separates it from Northwest Arm of Random Sound; its breadth varies from $\frac{1}{2}$ mile to $1\frac{1}{4}$ miles. In the lower reaches the depth of water is from 50 to 80 fathoms, and the shores so steep that no spot can be recommended for an anchorage, except the small harbors near the entrance now to be described.

Ice.—Smith Sound freezes in severe winters about 10th February, and breaks up from 10th to 20th April.

Tides.—It is high water, full and change, in Smith Sound at 7h. 8m.; springs rise $3\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet.

Old Bonaventure Harbor.—About a mile W. by S. from the south part of Bonaventure Head is Maiden Point, and off the south side of the point is the small, flat-topped, inaccessible Maiden Islet, with detached rocks extending 100 yards from its south side. Between the head and the islet is Old Bonaventure, which runs NW. about a mile to an anchorage for small vessels within two islets, the western of which is 20 feet high and the eastern 10 feet, with a channel 100 yards wide on either side of them. The western channel is 4 fathoms deep, the center 9 fathoms, and the eastern 6 fathoms. The anchorage is about 400 yards in extent, in 6 or 7 fathoms water, mud. Cat Cove, northward of Maiden Islet, is small and about 400 yards wide, with from 8 to 15 fathoms water, but it affords no anchorage.

New Bonaventure Harbor.—Between Maiden Islet and Wolf Head, $1\frac{1}{4}$ miles westward, are New Bonaventure, Broad Cove, and Kerley Harbors, all extending in about a mile, but open to the SSE. At the head of New Bonaventure and 300 yards from the shore there is a shoal patch with 3 fathoms water on it. The village of New Bonaventure is at the head of the bay, on the eastern shore, and the church on its left is in a commanding position and a remarkable object. The settlement was formed for the purpose of cultivation, and although the bay is not at all times safe for shipping, the ice does not form so soon, and breaks up sooner than at Old Bonaventure.

Broad Cove Rocks, on the west side of New Bonaventure and in the entrance to Broad Cove, dry 2 feet at low-water springs. New Bonaventure church, bearing northward of N. 25° E. (N. 54° E. mag.), and well open of the point opposite the village, leads eastward of them.

Kerley Harbor is an inlet $\frac{1}{2}$ mile long in a N. by W. direction and 200 yards wide, with a depth of 23 fathoms at the entrance, gradually shoaling to its head. It is separated from New Bonaventure and Broad Cove by White Point, which is low, and slopes from hills within it which are about 300 feet high; the point is steep-to. It affords good but confined anchorage at its head.

British Harbor.—Between Wolf Head, south of Kerley Harbor, and British Harbor Point, a distance of $1\frac{1}{2}$ miles, the coast is formed by a remarkable flat-topped cliff. The central part, from its appearance of being artificial, is called Battery Point. Behind it steep barren hills rise 300 and 700 feet above the sea. British Harbor is formed between the point of this name and West Point, a small, steep, rocky promontory, steep-to, $\frac{1}{2}$ mile SW. of it. The harbor runs in to the northward about a mile, and narrows to 200 yards, with a depth of 7 fathoms $\frac{1}{2}$ mile from the entrance. Within these narrows is the anchorage in 10 or 12 fathoms, mud, over a space of 300 yards. The head of the harbor forms into three little bays, on the shore of which are the houses of the fishermen.

A rock, with 4 feet water on it, lies outside the narrows 100 yards from the eastern shore. It may be avoided by keeping the western shore aboard.

Pope Harbor.—From West Point to Pope Harbor, nearly 3 miles, the coast is broken and rocky. Midway is Derby Cove, where there are a few houses and fishing stages behind a small peninsula, and a rock, with 3 feet water on it, lies 100 yards off a small cove 600 yards east of Pope Harbor. At the entrance to Pope Harbor there are two rocks above water, the western being 18 feet high, and there are other rocks uncovered eastward of the above, near the shore, within West Point. The two western channels formed by these rocks are 225 yards wide, with deep water. Inside, the harbor opens out to $\frac{1}{2}$ mile east and west by $\frac{1}{2}$ mile wide, with 4 and 5 fathoms, mud.

A sunken rock, with shoal water around it, lies 150 yards off the center of the north shore, and another rock lies about the same distance off the east shore. A large stream runs into the harbor on the north, draining a considerable tract of country, and good-sized spars are brought down by it. On the western side of the harbor is a snug basin, named Round Harbor, 400 yards long, 150 yards wide, and 3 fathoms deep. The entrance to it is narrow, with 2 fathoms water.

Indian Lookout is a remarkable hill immediately over the west shore of Pope Harbor. Its summit is a steep cliff 505 feet high.

Hickman Islands, $\frac{1}{2}$ mile southwestward of Pope Harbor, are a group of islets and rocks, extending a little more than $\frac{1}{2}$ mile

parallel to the shore, the eastern and highest being 98 feet above the sea. The islets are separated from the coast by a channel 400 yards wide, carrying from 20 to 29 fathoms water. At 100 yards from the main are two rocks; one uncovers; the other has less than 6 feet water on it.

Hickman Harbor is a narrow inlet fronted by islets. It is 100 yards across at the entrance, and 4 fathoms deep 200 yards within, when it quickly narrows to 20 yards, and is choked with rocks.

Warwick Harbor is $\frac{1}{4}$ mile south of Hickman Islands, on the west side of a small peninsula 45 feet high. The entrance is narrow, but within it is $\frac{1}{4}$ mile east and west and 200 yards wide. Much of this space is occupied by an islet, with rocks in the channel on either side of it. A vessel drawing 6 feet water could be warped in.

At $2\frac{1}{4}$ miles southwestward of Warwick Harbor is Burnt Point, the coast between forming a slight bend, which is steep-to, and in some places formed by cliff. At $1\frac{1}{4}$ miles farther on is a small bay with a stream running into it. A rock, 8 feet high, lies close off its east point.

Irelands Eye Island is about $2\frac{1}{4}$ miles in length NE. by N. and SW. by S., and a mile in breadth. Its coast line is deeply indented, and several remarkable peaks rise from the island. The highest, near the center, is 440 feet above the sea; it is steep and rocky on all sides. A narrow channel, called the Thoroughfare, separates the island from the NE. point of Random Island.

Irelands Eye Point, the NE. extreme of the island, is a steep cliff, and $1\frac{1}{4}$ miles south of it is the entrance to Irelands Eye Harbor. About midway is Jacobs Cove, with several small islets and rocks. Irelands Eye Harbor is available for large boats, which can lie alongside the fishing stages.

Ice.—Irelands Eye Harbor freezes between 1st January and 1st February, and clears between 10th March and early in April.

Tray Town Harbor is $\frac{1}{4}$ mile south of Irelands Eye Harbor, the coast between being rocky. This harbor winds in NW. by N. and then turns to the SW. a distance of a mile, with an average breadth of 150 yards; in the first reach the depth is 14 fathoms; in the second it shoals to 9 feet east of an islet near the end of the reach, where it becomes narrow; beyond the islet the depth is 12 feet.

At half a mile south of Tray Town Harbor is a small basin called Round Harbor, with 9 feet water, but the entrance being nearly dry at low water, it is of little value even to boats.

Gunner Rock, awash at low water, lies about 400 yards S. by W. of the entrance to Tray Town Harbor, and 150 yards from the shore.

Black Ledge, $\frac{1}{4}$ mile SW. of Anthony Island and fronting Round Harbor, is 600 yards in length; its east extreme has 6 feet water on it, and at its west extreme is a rock just covered at high water.

Green Island is 121 feet above high water, and nearly level on the summit; its east extreme lies $5\frac{1}{4}$ miles S. 22° W. (S. 51° W. mag.) from Bonaventure Head.

Anthony Island is about $\frac{1}{4}$ mile in length NE. and SW., nearly $\frac{1}{4}$ mile in breadth, and on its west side 208 feet above the sea. It lies W. by N. rather more than a mile from Green Island.

Duck Island is 139 feet high, 800 yards in length north and south, and 400 yards in breadth; it slopes toward the east, and is divided into two peaks by a valley running in the direction of its length.

Shag Islets extend NNE. 600 yards from the northern part of Duck Island. These islets are 30 feet high, about 50 yards wide, and steep all round.

Indian Islets, off the west point of Irelands Eye Island, cover a space of 700 yards north and south; the outer and largest islet is 145 feet above the sea.

The Thoroughfare separates Irelands Eye from Random Islands, and is $1\frac{1}{4}$ miles in length; at its south entrance are several rocky islets; the eastern one, called Thoroughfare Rock, is 11 feet high, and between it and the south point of Irelands Eye Island is the channel, 100 yards wide with 8 fathoms water. After passing the rock from the southward, bring it in line with the north point of Duck Island, bearing about S. 37° E. (S. 8° E. mag.), which will lead westward of Indian Rock at the north end of the channel, and when Bonaventure Head is open of Irelands Eye Point, bearing N. 59° E. (N. 88° E. mag.), a vessel will be northwestward of the rock and in 10 fathoms water, on the south side of Smith Sound.

Indian Rock is the only rock in The Thoroughfare which is not always above water; from it the north extreme of the largest Indian Islet bears about N. 51° E. (N. 80° E. mag.), distant 400 yards.

Random Island separates Smith Sound from Random Sound. Its highest hill, Ginpicker, rises 843 feet above the sea, 4 miles from the east coast, and midway between it and the sounds. The east coast of this island is much indented with small harbors, and off it are several islands and rocks.

Haydon Point.—The coast of Random Island, with the islets forming the west side of The Thoroughfare, is flat and of little elevation. Haydon Point, the north extreme of the island, is rocky and bordered close-to by rocks above water. The island of

this name lies 1,200 yards northeastward of the point, with rocks extending from it toward the shore.

Long Harbor.—At a mile south of Haydon Point, on the north side of Random Island, is the entrance to Long Harbor, a narrow inlet running to the south about $\frac{1}{2}$ mile, carrying about 8 to 2 fathoms water to its head. An islet lies at the entrance, with deep water on either side; but a reef, which covers at high water, extends 100 yards from its SE. point, narrowing the passage on the side.

Lower Lance Cove.—At $\frac{1}{2}$ mile westward of Long Harbor is an islet 12 feet high and about 50 yards square. From this islet the coast continues southwestward almost straight for $4\frac{1}{2}$ miles, to Lower Lance Cove; it is steep-to, and there is no anchorage. Lower Lance Cove is open to the NE. and is 600 yards wide, but the depth of water being 42 fathoms, there is no anchorage.

Between Lower Lance Cove and Bluff Point, about $2\frac{1}{2}$ miles NW. of it, the coast forms a bend, with several little coves separated by rocky points, where fishing stations have been established near small streams, the whole under the name of Britannia Cove. As the vicinity of this cove is favorable for agriculture, a less migratory people than Newfoundland fishermen generally are have settled here.

Lance Cove Rock, with 6 feet water on it, lies off Upper Lance Cove; it is small, with 5 to 10 fathoms water round it, and 4 fathoms between it and the shore, from which it is distant 400 yards.

Anchorage.—There is anchorage in Burgoyne Cove, west of Tilton Head, in 12 fathoms water, 300 yards from the shore; it is a fair temporary anchorage, and sheltered from the strong winds which generally blow up and down the reach.

Snooks Harbor.—From Bluff Point on the south shore to Snooks Harbor the coast is steep, in places cliffy, with a few rocks 100 yards off. The harbor is $\frac{1}{2}$ mile square within the line of the coast, and there are 12 fathoms water, mud, $\frac{1}{2}$ mile from its head.

Smith Point, on the north shore, directly opposite Snooks Harbor, is steep-to; the coast between it and Burgoyne Cove is bold, clear of danger, and much broken by numerous gorges and small valleys. Approaching Smith Point the land is less broken; there are a few houses on the coast a mile east of the point, and 200 yards off them there are 4 fathoms water, but it suddenly deepens to 10 and 20 fathoms.

At $1\frac{1}{2}$ miles eastward of Smith Point is Upper Rocky Bight, where there are 6 fathoms water, rocky bottom, at 600 yards from the beach, suddenly deepening to 30 fathoms.

The Bar is the shallow channel connecting the head of Smith Sound with the head of the Northwest Arm of Random Sound,

and up to which they both gradually shoal. At high water it is $\frac{1}{2}$ mile wide; at low water spits of sand and stones stretch off both shores, leaving a narrow channel 2 feet deep, $\frac{1}{2}$ mile long.

Bakers Loaf.—At the NE. end of Random Island the land rises 546 feet above the sea, forming a remarkable peak called Bakers Loaf.

Northwest Arm.—On the SW. side of Connor Islet, separated from it about 100 yards, is Sullivan Islet, 35 feet high, and between the latter and a flat promontory 46 feet high, called Silldown Point, $\frac{1}{2}$ mile westward of it, is the entrance to the small inlet called Northwest Arm. The western half of the entrance is obstructed by a bed of rocks, some of which are uncovered; the channel is between these rocks and Sullivan Islet, and at the foot of Bakers Loaf. The anchorage is about $\frac{1}{2}$ mile square, in 9 fathoms water, mud. There is a small nook inside Sullivan Islet with 2 fathoms water, called Riders Harbor.

A rock, with 6 feet water on it, lies just off the east end of Sullivan Islet.

Little Harbor.—The entrance to this small inlet is 400 yards wide, between the rocky islet south of Silldown Point and the opposite shore, which is bold with a small rock above water off it. The inlet runs to the west about $\frac{1}{2}$ mile, and then turns to the S. by W. for 400 yards; it is narrow and carries a depth of 4 fathoms.

The coast between the above harbors and East Head, $1\frac{1}{2}$ miles southward, is of low cliff; the hills over it are flat-topped, and the highest is 492 feet above the sea. East Head is a cliff 88 feet high, and the north point of entrance to Long Cove and Deer Harbor.

North Bird Islet, 112 feet high, lies one mile north of East Head, and $\frac{1}{2}$ mile from the shore; in the cove NW. of the islet is a remarkable flat cliff, named Cold East Flake, from its supposed resemblance to a fish flake. South Bird Islet, 121 feet high, lies $\frac{1}{2}$ mile north of East Head and 350 yards from the shore.

Long Cove runs in N. by W. $\frac{1}{2}$ mile; it is about 200 yards wide, and shoals from 20 fathoms at the entrance to 2 fathoms at its head. At 400 yards east of Long Cove is a reef extending more than 200 yards from the coast and a little within the west point, and a third the distance across to the east shore is a rock with 6 feet water on it.

Deer Harbor is about $\frac{1}{2}$ mile west of Long Cove; its entrance is 100 yards wide and 5 fathoms deep, between a small low islet on the north, and the rocks close off a point on the south. The harbor is 600 yards in length and about 200 yards in breadth, and has from 5 to 9 fathoms water.

Ice.—Deer Harbor is frozen in February and breaks up the latter part of April.

Verge Island lies about $\frac{1}{2}$ mile from the coast, between East Head and East Random Head, and covers, with the rocks and islets off it, a space of a mile north and south by $\frac{1}{2}$ mile in breadth; it is 204 feet above the sea, 700 yards in length east and west, and $\frac{1}{2}$ mile in breadth. From its NW. end rocky islets extend $\frac{1}{2}$ mile NNE., terminating in a small black rock about 30 feet high; from the SW. end rocky islets extend 600 yards to the southward, the largest, Rat Island, being 65 feet high. At the SE. end Copper Islet, 130 feet above the sea, lies 600 yards off, with rocks between; and 300 yards off the NE. end of the island is a rock called Verge Rock.

Deer Rock.—This small rock has 4 feet water on it, and is generally marked by a break, except in a smooth sea at high water. It lies with the bluff of Bonaventure Head in line with the saddle of Duck Island, bearing N. 28° E. (N. 57° E. mag.).

Gun Ledge, with 6 $\frac{1}{2}$ and 7 $\frac{1}{2}$ fathoms water on it, extends about $\frac{1}{2}$ mile N. by E. of Deer Rock with 21 fathoms between. Bonaventure Head, midway between Duck and Green Islands, N. 24° E. (N. 53° E. mag.), leads southeastward of these dangers, and Ginpicker Hill, in line with the west point of entrance to Deer Harbor, N. 85° W. (N. 56° W. mag.), leads northward of the Gun Ledge.

Random Head Harbor, on the north side of East Random Head, is about $\frac{1}{2}$ mile square, with from 10 to 18 fathoms water; the south and west shores are much indented, with rocks extending 600 yards off. The north shore is bold, and here small vessels may anchor in a bight, but with this exception the harbor is not recommended. Pigeon Islet, on the north side of entrance, is 400 yards in length north and south, 100 yards wide, level, and about 40 feet above the sea; from it a reef extends SE. by S. 300 yards, terminating in Mouse Rock, awash. The passage between Mouse Rock and the south shore is 600 yards wide.

Tides.—It is high water, full and change, in Random Head Harbor at 7h. 8m.; springs rise 3 $\frac{1}{2}$ feet, neaps rise 2 $\frac{1}{2}$ feet.

East Random Head, the north point of entrance to Random Sound, is 512 feet high, and the termination of a range of hills, the highest of which is 808 feet above the sea. The eastern extreme of the head consists of several quoin-shaped masses, which appear from the head as landslips. A bank with 10 fathoms water on it extends 400 yards off the head.

Light.—On Motion Island, off East Random Head, a cylindrical-shaped iron tower, 36 feet in height and painted in red and white checks, exhibits, at an elevation of 126 feet, an intermittent white light having a period of system of four seconds—light two seconds, eclipse two seconds; it should be visible 13 miles. The keeper's

dwelling, painted white, with a red roof, stands north of the light-house.

West Random Head is the south point of the entrance to Random Sound, and is about $3\frac{1}{2}$ miles SW. from East Random Head. Its summit is 291 feet high, level, and the east extreme of the land is a high cliff, just separated by a chasm from the main part of the head. Rocks, mostly above water, extend from it about 200 yards eastward.

Random Sound.—The entrance to this sound is between East and West Random Heads. At $5\frac{1}{2}$ miles within East Random Head the sound is divided into two branches by a tongue of land 11 miles in length, in an east and west direction, and about 3 miles in breadth, the eastern termination of which, named Middle Cliff, faces the entrances, and is a steep cliff, 357 feet high.

Northwest Arm.—At a little less than $\frac{1}{2}$ mile westward of East Random Head, and 100 yards off a steep shelving point, is a rock with less than 6 feet water on it, and another rock, awash, lies close off the east side of the point; at about $\frac{1}{2}$ mile farther in there are some rocky islets, and about 200 yards from the shore a patch with 3 fathoms water on it; a little more than $1\frac{1}{2}$ miles farther to the westward is an islet 40 feet high, and 800 yards farther in another islet, at the entrance to Salmon Cove. These latter islets are separated from the shore by deep water.

Ice.—Random Sound freezes in severe winters about 10th February, and breaks up between 10th and 20th April.

Salmon Cove extends in 800 yards, and at its head is a salmon-fishing station. From this cove the coast trends WNW. and NW. for 3 miles to Strong Islands, in Northwest Arm.

Strong Islands consist of two principal islands, one 123 feet, the other 145 feet high, with a few rocks above water. The north side of these islands form with the coast an inlet called Strong Tickle, which is nearly $\frac{1}{2}$ mile in length and 100 yards wide, with 4 to 10 fathoms water, except near its head, where there are $1\frac{1}{2}$ fathoms.

Quarry Rock, lying 400 yards SW. by S. of the south point of the west Strong Island, has 12 feet water on it.

Gooseberry Islet lies nearly in mid-channel, $1\frac{1}{2}$ miles westward of Strong Islands; it is small and 66 feet high. A rocky shoal, with $4\frac{1}{2}$ fathoms water on it, lies $\frac{1}{2}$ mile N. by E. of Gooseberry Islet, and another, with $5\frac{1}{2}$ fathoms on it, 800 yards WNW. of the islet. From this islet the first reach of the Northwest Arm of Random Sound continues to the westward for $7\frac{1}{2}$ miles, with the depth in mid-channel decreasing from 90 to 60 fathoms. The shore is steep-to, and there is no anchorage.

Coast.—From Middle Cliff, the eastern extremity of the land separating the two arms of the sound, the coast of steep cliff trends $1\frac{1}{4}$ miles northwestward to Passenger Point, the south point of entrance to the Northwest Arm, at 800 yards beyond which is Holloway Rock, close to the shore and the termination of a steep point. The latter point separates two coves, and $\frac{1}{4}$ mile westward of it is Pudding Point, a rocky termination of a ridge of hills, which are 548 feet above the sea. At $\frac{3}{4}$ mile farther west is Black Duck Cove, $\frac{1}{4}$ mile deep, with from 5 to 20 fathoms water.

Hickman Harbor, opposite Black Duck Cove, is 600 yards wide at its entrance, and runs in NW. $\frac{1}{4}$ mile; on its east shore is a bed of rocks with from $1\frac{1}{4}$ to 6 feet water on them, elsewhere there are from 8 to 18 fathoms water, gravel and mud. This harbor is a mile from West Strong Island, and at about two-thirds the distance there is a slate quarry.

Maggotty Cove.—At nearly $1\frac{1}{4}$ miles westward of Black Duck Cove, on the south shore, is a remarkable cone 550 feet high, called The Tolt; between it and Maggotty Cove the coast forms a curve to the north, and its extremity is named Tolt Point. Maggotty Cove is $3\frac{1}{4}$ miles above The Tolt, and has 25 fathoms water 400 yards from the shore; a large stream runs into it, at the mouth of which is a sawmill. The valley of this stream runs southward in the direction of Hatchers Cove in Southwest Arm, with low land right across.

South Bight.—On the south shore, in the elbow of Northwest Arm, is a bay named South Bight; here the coast trends northward, and about $\frac{1}{4}$ mile on is another bay, named The Bottom.

Bald Nap and Forster Rocks.—From South Bight the sound is $2\frac{1}{4}$ miles across to the Bald Nap and Forster Points, on the northern shore; these points are shelving and rocky, with patches of rock and shoal water off them. Bald Nap Rock, with 9 feet water on it, lies 600 yards SW. by W. nearly from Bald Nap Point. Forster Rocks extend off rather more than $\frac{1}{4}$ mile from the point of the same name, and the outer rock, with 6 feet water on it, lies a mile NW. from Bald Nap Rock.

Gooseberry Islet, just open of Lady Point, East (S. 61° E. mag.), leads southward of these dangers.

Second Reach.—Beyond the Bald Nap Rocks, Second Reach runs NNW. 7 miles to The Bar. On the eastern side the land is wooded, undulating, and about 150 feet high. On the western side, northward of The Bottom, the land rises steeply, 667 feet above the sea, for about 2 miles to Bluff Point, with the coast mostly of cliff. At the extremity of Bluff Point is a shingle spit, on which is a curious upright pinnacle rock, called the Red Man; from this to Red Point, nearly 3 miles farther on, the coast becomes low. Lower

Shoal Harbor, $1\frac{1}{2}$ miles northward of Bluff Point, dries at low water, and rocks which are covered at high water lie 200 yards off the upper point; a large stream runs into it.

Red Point is a low cliff with a remarkable hill over it, 517 feet high. The sound here, which is the narrowest part, is only $\frac{1}{2}$ mile across to Brown Mead, on the east shore. Brown Mead is a spit of sand a few feet above high water, covered with grass and brushwood.

Shoal Harbor, on the west shore above Red Point, is $\frac{3}{4}$ mile wide at the entrance, and at high water extends a mile within the line of coast, but the deposit from a large stream which runs into it dries out $\frac{1}{2}$ mile. The depth gradually increases to 5 fathoms $\frac{1}{2}$ mile from the dry bank.

There is a sawmill at Shoal Harbor, the logs for which are brought down Shoal Harbor River, and a village at Upper Shoal Harbor, but supplies are scarce.

Communication.—There is railway communication with St. Johns, distant $136\frac{1}{2}$ miles, by the Northern and Western Railway. The station is at Shoal Harbor, where there is a post office, but the telegraph office is at Lower Shoal Harbor. A small steamer, conveying mails and passengers, plies to and from the neighboring settlements.

Anchorage.—There is good anchorage from a line between Red Point and Brown Mead to The Bar, a space $1\frac{1}{2}$ miles in length by $\frac{1}{2}$ mile wide. The depth decreases gradually from 24 fathoms in approaching The Bar, but rather suddenly toward either shore.

The most convenient berth for a vessel of war is with the white houses at Shoal Harbor Head open of the wooded point on the south side of the harbor, in from 4 to 5 fathoms water.

Southwest Arm of Random Sound runs in about 14 miles from West Random Head, with an average breadth of a mile, and from 175 fathoms water at the entrance the depth decreases to 50 fathoms at a mile from the head of the arm.

Fox Harbor.—The coast between West Random Head and Fox Islet, $1\frac{1}{2}$ miles westward, is steep and broken, with rocks 100 yards off. Fox Islet is 30 yards in length and 200 yards in breadth, with steep cliff 93 feet high on the north. The entrance to the small harbor of the same name is on the east side of the islet, and about 200 yards wide. Within, the space is 400 yards in extent, but encumbered with rocks, and fit only for large boats, which lie under the east head close to the shore.

Little Heartsease Harbor.—At $\frac{1}{2}$ mile from Fox Islet is a bluff promontory 309 feet high; thence to Little Heartsease, $1\frac{1}{2}$ miles farther on, the coast is low and rocky. Little Heartsease runs in SSW. $\frac{3}{4}$ mile, with several arms, one of which reaches within 400 yards of the pond at the head of Heartsease. The harbor is free

from danger, with an average breadth of 150 yards, and the depth decreases from 5 fathoms at the entrance to 2 fathoms at the head. There is a rock with 3 feet water on it, nearly closing up the entrance of the first arm on the eastern shore.

Hodge Hole.—At 600 yards west of Little Heartsease is a cliffy point 135 feet high, with a rock 3 feet above high water close off it. At about $1\frac{1}{2}$ miles beyond this is Hodge Hole, with an islet in the middle of it, on the SW. side of which is a space about 200 yards square, where small vessels may anchor.

Rocky Harbor.—On the north coast, $\frac{1}{2}$ mile southwestward of Middle Cliff and 100 yards from the shore, is Southwest Rock, 8 feet above high water, and immediately west of it is Rocky Harbor, which runs in NW. $\frac{1}{2}$ mile by 300 yards wide. A rock awash at low water lies near the center of the harbor, leaving a channel along the east shore, but the west shore is foul. Long Cove, a mile further on, is small, with 5 fathoms water. The coast between is steep cliff and 316 feet high.

St. Jones Within Harbor is $4\frac{1}{2}$ miles westward of West Random Head. It is 800 yards wide at the entrance, and trends in NNW. $\frac{1}{2}$ mile, with 20 fathoms water, and then NW. another $\frac{1}{2}$ mile to its head. In the inner portion the breadth is 400 yards, and there is good anchorage in 5 to 7 fathoms water. Off the east point of entrance is a small rock above water. There is also anchorage for small vessels in 5 fathoms near the head of Hatchers Cove, $2\frac{1}{2}$ miles above St. Jones Within Harbor.

North Bight, $1\frac{1}{2}$ miles from the head of the Southwest Arm, is about 800 yards square, with from 4 to 8 fathoms water. The bottom is strewn with bowlders, many of them 6 feet in diameter, particularly on the eastern shore, and a shoal, with 12 feet water on it, extends 300 yards from the west point.

Anchorage.—There is anchorage in from 3 to 10 fathoms water, over mud, $\frac{1}{2}$ mile from the mouth of a stream, named Black Brook, running into the head of Southwest Arm.

Long Island, south of West Random Head, is about $\frac{1}{2}$ mile from the shore and immediately north of the entrance to Heartsease. It is about $\frac{3}{4}$ mile in length NE. and SW., 400 yards in breadth, and 132 feet high, its SE. coast being steep cliff. A rock, just above water, lies 100 yards off it and 600 yards from its SW. extreme.

Green Islets are a group of flat-topped rocks or islets, 63 feet above high water, lying a little more than $\frac{1}{2}$ mile E. by N. of Long Island, with $3\frac{1}{2}$ fathoms water between, and about the same distance from West Random Head.

Heartsease Ledge, with from $2\frac{1}{2}$ to 10 fathoms water on it, extends ENE. about $\frac{1}{2}$ mile from Green Islets, with a breadth of

600 yards. The NW. extreme of West Random Head kept open, bearing N. 81° W. (N. 52° W. mag.), leads north of the ledge; and Duck Island, open of East Random Head, N. 31° E. (N. 60° E. mag.), leads east of the ledge.

White Rocks, off the entrance to Heartsease, are 9 feet above water, and a few yards in extent. At 200 yards westward of them is a rock on which the sea generally breaks, and at $\frac{1}{4}$ mile in the same direction the depth is less than 10 fathoms. On the north and east sides the rocks are steep-to. Heartsease church, open south of Long Island, bearing about N. 29° W. (North mag.), leads westward of the rock.

Beaver Rock, with 3 fathoms water on it, lies with the White Rocks bearing N. 34° E. (N. 63° E. mag.), distant $1\frac{1}{4}$ miles nearly. West Random Head open of the NE. point of Long Island, N. 5° W. (N. 24° E. mag.), leads east of the rock.

Heartsease is a long narrow inlet running in southwestward about 2 miles, and carrying from 24 fathoms water at the entrance to shallow water at its head. The north point of entrance is a small peninsula, connected to the mainland by a neck of shingle 300 yards long and 9 feet above high water. A hundred feet up the hill over it is the church, in the form of a large ordinary house, isolated and conspicuous.

The breadth of the inlet is 400 yards for nearly a mile, with 10 to 18 fathoms water, mud; then about 200 yards for a mile, with 7 to 10 fathoms, mud, beyond which is a pond. On the north shore, opposite the SW. point, are two rocks, each with 2 feet water on it, the only dangers, and should be avoided. A swell sets into the entrance with easterly gales, but not sufficient to affect a vessel off Ganny Cove, on the north shore, $\frac{1}{4}$ mile within the entrance.

Bald Head.—The coast from the entrance to Heartsease trends south 2 miles to Bald Head. It is rugged, with several large steep rocks close off it, the land within being broken into numerous hills; over the coast they reach 570 feet above the sea, and at $1\frac{1}{4}$ miles within, the highest, 659 feet. Bald Head is a bold cliffy bluff, 489 feet high. A valley runs at its back parallel to the coast, giving it a remarkable semi-isolated appearance.

(H. O. Chart No. 588.)

St. Jones Head, about 2 miles SSW. from the south part of Bald Head, is 612 feet high, bold and cliffy. The coast between the heads is of the same character, and about halfway is Round Harbor.

Round Harbor.—The entrance to this little harbor is only about 100 yards wide, and is not easily recognized in the straight cliffy

coast which extends on either side of it; but when well in with the land the south head, a narrow strip, 210 feet high, projecting northward, will be seen against the higher land behind it. The entrance is 3 fathoms deep and runs in about 200 yards, when it turns abruptly to the south to the anchorage behind the south head. The harbor is less than 400 yards in length, 200 yards wide, with a depth of 3 to 5 fathoms, mud.

Seal Island, between St. Jones Head and St. Jones Harbor, lies 100 yards from the shore and parallel to it. It is 800 yards in length, and the extreme breadth 300 yards. It consists of two principal portions, the northern 60 feet high, and the southern 148 feet, connected by a low neck, on which are several rocky hummocks.

St. Jones Islet, off the entrance to St. Jones Harbor, lies SE. by E. 1,200 yards from North Head. The islet is small, but 67 feet high, and inaccessible. It is steep to on the east side, but rocks extend 270 yards west from its west side, and shoal water about 100 yards from the other sides.

St. Jones Harbor is a narrow inlet running in west 3 miles. When seen on this bearing it appears remarkable from its steep shores appearing as cliff behind cliff to the head. Crown Hill, steep and rugged, rises 820 feet high at the head of the harbor, and with the cone-shaped hills rising abruptly from the land north of the harbor are sufficient to indicate its position. St. Jones Islet is a good mark for the entrance.

The average breadth of the harbor for $1\frac{1}{2}$ miles is 200 yards, with 20 fathoms water at the entrance, shoaling to $6\frac{1}{2}$ fathoms, rocky bottom. At about $\frac{1}{2}$ mile within North Head and on the same shore is a small bay with several rocks extending a short distance beyond the line of the coast. Within the first $1\frac{1}{2}$ miles the harbor narrows to 140 yards and carries $4\frac{1}{2}$ fathoms for about $\frac{1}{2}$ mile, when it opens out to the head, which is formed by two bays. The south bay is small in extent; on its southeastern shore are some small islets and rocks 135 yards off, leaving an anchorage northwestward of them in 4 to 7 fathoms water, mud. A small arm, 20 to 30 yards wide, with 2 fathoms water, runs southeastward from the head of the bay to within 200 yards of the Northeast Arm of Deer Harbor. The NW. Bay is the extreme head of the harbor; it is about 600 yards in length, N. by E. and S. by W., and 400 yards wide, with 4 to 9 fathoms, mud.

Deer Harbor is an extensive narrow inlet running about $4\frac{1}{2}$ miles west indented with small arms and bays, and until nearly halfway in is encumbered with islets. Immediately within the entrance it opens out to more than $\frac{1}{2}$ mile in extent, a portion of it being taken up by Grub Island, but arms extend to the north and eastward.

Deer Harbor Head, the north point of entrance, is 400 feet high, and on its SE. side clear of danger; between the head and Robinson Point, a mile beyond it, there are several rocky islets, the outer, named Green Islet, is 24 feet high, and the western, Poor Boy Islet, 20 feet high; shallow ground, with 3 and $3\frac{1}{2}$ fathoms water on it, extends a little southward from this latter islet; and broken ground, with $1\frac{1}{2}$ fathoms on it, skirts Robinson Point, 300 yards off.

Poor Boy Ledge, with 15 feet water on it, is 200 yards in extent, steep-to all round, and lies SSE. 400 yards from Poor Boy Islet.

Big Rock, with $3\frac{1}{2}$ fathoms water on it, is small and steep-to all round; it lies nearly in the middle of the entrance between Green Islet and Big Island. Crown Hill in line with the NE. point of Grub Island, bearing N. 48° W. (N. 19° W. mag.), leads north-eastward of the rock, and the rock off St. Jones Islet, open of Deer Harbor Head, N. 33° E. (N. 62° E. mag.), leads southeastward of the rock.

Big Island, on the south side of the entrance, is 218 feet high, and being separated by only a narrow channel from the mainland, which is higher, it is not easily distinguished when making the harbor. Tea Cove Point, $\frac{1}{2}$ mile northward of Big Island, is shelving and steep-to. Between this point and Poor Boy Islet and the shore of Robinson Point the distance is $\frac{1}{2}$ mile, and the narrowest part of the entrance.

Grub Island, lying about $\frac{1}{2}$ mile within Tea Cove Point, is 195 feet high, and separated from the mainland by a narrow channel.

Southeast Arm, north of Robinson Point, runs back eastward $\frac{1}{2}$ mile, is 200 yards wide and from 7 to 12 fathoms deep; its head is separated from Birch Cove on the seacoast by a low isthmus 400 yards in breadth.

Northeast Arm.—Sophia Head is 257 feet high and separates Southeast Arm from Northeast Arm. The latter runs in NNE. 800 yards, with a breadth of 300 yards, having from 4 to 7 fathoms water.

Anchorage.—There is fair anchorage for small vessels in the bay west of Grub Island, in from 7 to 20 fathoms water, over a space of 600 yards north and south by 400 yards wide. At the head of this bay is a small arm, 30 yards in breadth, with a depth of $1\frac{1}{2}$ fathoms, running in west 800 yards.

Directions.—With a fair wind bring Crown Hill in line with the NE. point of Grub Island and steer N. 48° W. (N. 19° W. mag.) between Poor Boy Ledge and Big Rock—Crown Hill will soon be lost sight of, being behind the near range—until the east extreme of Big Island is in line with Tea Cove Point. Then steer N. 20° W. (N. 9° E. mag.) round Grub Island, and anchor as convenient.

To enter the harbor west of Big Rock, open Sophia Head of Robinson Point and steer with the head bearing N. 24° W. (N. 5° E. mag.) until the south end of Poor Boy Islet is seen between Green Islet and Deer Harbor Head, about N. 81° E. (S. 70° E. mag.); then steer about N. 48° W. (N. 19° W. mag.) in mid-channel, being careful to avoid the shoal extending from Robinson Point, and when the east point of Big Island is in line with Tea Cove Point proceed as before. In working, a vessel should pass west of Big Rock.

Should a vessel wish to enter the inner portion of the inlet, a rock with 5 feet water on it, lying 250 yards within the entrance, should be avoided by keeping a little to the southward of the entrance. The channel is then between Gooseberry Islet and a patch of rocks 5 feet above water, 300 yards to the NNW.; having passed these a vessel may anchor anywhere, in from 4 to 10 fathoms water. Two considerable streams here run into the inlet, the banks of which dry out $\frac{1}{4}$ mile.

Ice.—St. Jones and Deer Harbors freeze during January and break up the latter part of April.

Tides.—It is high water, full and change, in Deer Harbor at 7h. 49m.; springs rise $3\frac{1}{2}$ feet, neaps rise 2 feet.

Shoal Bay, south of Big Island, is about $1\frac{1}{4}$ miles deep, narrow, encumbered with small islets and rocks, open to the eastward, and has nothing to recommend it to the seaman. On the south side of the entrance are Harbor Rocks, 37 feet high, lying about 600 yards northward of Thames Harbor Point, and a reef awash extends 400 yards NE. from the rocks.

Thames Harbor Point is separated from the rocks by a channel 200 yards wide, with 9 fathoms water. The point is the NE. extreme of a flat island 40 feet high, which has a channel between it and the mainland 100 yards wide, and where large fishing boats lie in 2 fathoms water, but the south entrance is dry at low tide.

Goose Cove, on the south side of Shoal Bay, is about 800 yards deep, 200 yards wide, with 9 to 14 fathoms water, rocky bottom. The Riffraffs are several rocks extending 250 yards north from the west point of Goose Cove.

(H. O. Chart No. 584.)

Copper Island, SSE. of the Thames Harbor Point, is 400 yards in length north and south, broken, and 82 feet high, and from its SW. side rocks extend in that direction 800 yards; the most distant is 15 feet above water. At a mile S. 37° W. (S. 66° W. mag.) of the island is a patch of slate rocks 300 yards from the shore, and about $\frac{1}{4}$ miles S.W. is the NE. point of Bull Island, on the north side of entrance to the bay of the same name, the intervening coast

being bold and rocky. Niagara Point is the northern termination of a steep cliff, rather more than $1\frac{1}{4}$ miles from the NE. point of Bull Island. A narrow ledge, 600 yards in length, NNE. and SSW., with 9 fathoms least water on it, lies $1\frac{1}{4}$ miles NE. of Niagara Point, and about $\frac{1}{2}$ mile from the shore.

Center Hill, an isolated cone, is the highest land in this neighborhood, and separates the head of Deer Harbor from that of Bull Arm; it is 1,081 feet above the level of the sea and rises 540 feet above an elevated broken plateau. It overlooks the isthmus of Avalon, and has a commanding view of Placentia and Trinity Bays; but although the highest land, it is not the most remarkable from Trinity Bay, as the rocky hills in the foreground of less elevation attract attention, particularly Crown Hill and two cones north of St. Jones Harbor, 786 and 878 feet high.

Bull Island, $1\frac{1}{2}$ miles long and partially covered with wood, lies $3\frac{1}{4}$ miles NE. by N. from Masters Head; its center is 281 feet above the sea. On the NW. side of this island, near the north extreme, is an excellent little harbor for fishing craft, quite landlocked, with a sufficient supply of fresh water, and in stormy weather 50 to 60 small schooners and boats may be seen taking shelter in it. A rock, awash at low water, lies near the southern side of its entrance, but this danger may be easily avoided by keeping the gravelly point on the opposite shore close aboard.

Bull Island is separated from the main by a channel $\frac{1}{2}$ mile wide, called Bull Island Tickle. Near the center of the tickle, rather toward the northern entrance, is a ledge, 6 feet above water, named Flat Rocks; extending ENE. 100 yards; and SSE. the same distance from the south end of the ledge are two sunken rocks, with about 2 feet water on them; the north extreme of the ledge is steep-to. The shores of the tickle are otherwise bold and steep-to, but the best passage is west of Flat Rocks.

Anchorage.—Temporary anchorage may be obtained at $\frac{1}{2}$ mile southwestward of Flat Rocks, in from 10 to 12 fathoms water, over a coarse mixed bottom.

Tides.—It is high water at Bull Island, full and change, at 7h. 22m.; springs rise $3\frac{1}{2}$ feet, neaps rise 2 feet.

A current, principally depending on the wind, sets through the tickle at the rate of $\frac{1}{2}$ mile an hour.

Rix Harbor.—Westward of the SW. side of Bull Island is Rix Harbor, with a depth of 7 fathoms, affording good anchorage for small vessels. Chalk Rocks at the entrance to the harbor are about 100 yards in extent north and south and consist of several heads, all of which are a few feet above water. Small vessels may enter either side of the rocks, the shores being bold and steep-to.

Water is easily procured here from the streams which run into the head of Rix Harbor.

Bull Arm.—The entrance to this inlet or arm is 3 miles wide between Bull Island and Masters Head; from thence it takes a NNW. direction for 7 miles, and then trends WNW. for 2 miles to its head. There are no dangers at a moderate distance from either shore, and no good anchorage except at the head of the arm.

Mosquito Coves.—At $5\frac{1}{4}$ miles from Masters Head, on the west side of Bull Arm, is Great Mosquito Cove, at the head of which there is a depth of 7 fathoms at 200 yards from the shore. There are several other small coves on this side of the arm adapted for fishing boats, the largest of which is Little Mosquito Cove, but a rock, with 5 feet water on it, lies near the middle of the entrance.

Ice.—Bull Arm freezes about the middle of January and breaks up about 10th May.

Masters Head, the south point of entrance to Bull Arm, forms the north point of Rantem Cove, and has deep water close-to, but at $\frac{1}{4}$ mile SE. of it there is a spot with 15 fathoms water.

Rantem Cove has very deep water, but anchorage and good shelter may be obtained by standing well up into its north or NW. arms. Near the middle of this cove, and rather on the north side, is Boulton Islet, 20 feet above high water. There are also two sunken rocks rather in the way of a vessel going up the NW. arm, one, with 2 feet water on it, lying 300 yards S. 64° E. (S. 35° E. mag.), and the other, with 5 feet, 300 yards S. 12° W. (S. 41° W. mag.) from Boulton Islet. The shores of the cove are steep-to.

The SW. arm of the cove is too much exposed from the northward for an anchorage, but a fresh-water stream running into it is considered excellent for trout fishing.

Communication.—There is railway communication with St. Johns, distant $89\frac{1}{4}$ miles, by the Northern and Western Railway; there is also telegraphic communication.

Big and Little Chance Coves, where a few families reside, are only available for small vessels during the summer months. The best shelter will be found in a small bay on the north side of Little Chance Cove, but when entering either cove the north points must be kept aboard. A rock, with 6 feet water on it, lies nearly 600 yards N. 20° W. (N. 9° E. mag.) from Green Head, the east point of Big Chance Cove, and between it and Green Head is a rock that dries.

Tickle Bay, on the west side of Tickle Harbor Point, is an excellent place for fish; but though the water is comparatively shallow, and the bottom good near the head of the bay, it is not a safe anchorage, as a swell nearly always sets in, and with north or NNE. gales it is very dangerous.

At $\frac{1}{4}$ mile from the SE. shore is a rocky bank running parallel with the land for one mile; at the outer or north extreme of the

bank is Hudson Rock, with 15 feet water on it, which is 2 miles S. 54° W. (S. 83° W. mag.) from Tickle Harbor Point.

Colliers Arm, where a few fishermen reside, is at the SE. corner of Tickle Bay, at the entrance of a salt-water lake; it is protected by a small islet and a reef of rocks, but the entrance is only 200 yards wide, with 4 feet in it at low water.

Tidal Stream.—The ebb stream sets out very strongly, and over a sandy spit, so that none but those locally acquainted should attempt it.

Communication.—There is railway communication with St. Johns, distant 82½ miles, by the Northern and Western Railway.

Tickle Harbor Point is the termination of a narrow promontory extending 5 miles in a northerly direction from the head of Trinity Bay, and dividing it into two nearly equal parts. The land near the extremity of the point rises 432 feet above the sea, and continues with some undulations about the same height.

Bower Ledge.—This rocky patch, with 8 fathoms least water on it, lies NW. nearly 2½ miles from Tickle Harbor Point. Uneven ground extends ¼ mile to the northeastward of the ledge.

(H. O. Chart No. 1102.)

Baccalieu Island, off the termination of the peninsula separating Trinity and Conception Bays, is 3 miles in length, about ¼ mile in breadth, and almost inaccessible.

Light.—On the northern part of Baccalieu Island is a cylindrical brick lighthouse, 34 feet in height and painted red, which exhibits, at an elevation of 443 feet, a revolving white light every twenty seconds, which should be visible 24 miles. The light will be obscured by the high land when the southern extreme of the island bears N. 5° W. (N. 24° E. mag.) and is distant less than 8 miles.

The keeper's dwelling is a detached square building painted white, with a red roof.

Old Perlican, 6 miles SW. of Grates Point, on the east side of entrance to Trinity Bay, is a summer anchorage for small vessels, in from 3 to 5 fathoms water, to the southward of Perlican Island, which is separated from the mainland by a channel 800 yards in width, but only fit for boats. A swell sets in with northerly gales. In entering, give Perlican Island a berth of 400 yards, to avoid the shallow ground extending from it, and anchor with its extremes bearing N. 64° W. (N. 35° W. mag.) and N. 15° E. (N. 44° E. mag.).

Communication.—The Coastal Steamship Company's steamer between St. Johns and Battle Harbor calls at Old Perlican fortnightly during summer and autumn.

Ice.—Old Perlican Harbor usually freezes about 15th January; the time of clearing varies, as during some years the ice may only remain a week. Northern ice does not arrive every year, and when it does so is variable in its date of appearance, which is generally between 1st March and middle of April; it seldom remains for any time after the latter date.

Tides.—It is high water, full and change, at Old Perlican Anchorage at 6h. 46m.; springs rise $3\frac{1}{2}$ feet, neaps rise $2\frac{1}{2}$ feet.

Salvage Point is a rugged beach of stones around what appears to be a steep gravel cliff, behind which the hills rise between 400 and 500 feet. The rocks of the same name lie $1\frac{1}{2}$ miles north of the point, and from it to Kings Head, 7 miles southwestward, the coast is so encumbered by dangers with deep water between them that a stranger should on no account approach nearer than to have Grates Point bearing N. 71° E. (S. 80° E. mag.) until the Sugar Loaf (rising from the shore 415 feet high, $3\frac{1}{2}$ miles south of Kings Head) is well open of Kings Head S. 18° W. (S. 47° W. mag.)

Seal Cove, on the south side of Salvage Point, is about $\frac{1}{2}$ mile deep, but affords no shelter.

Dangers.—The following are the dangers which lie off this part of the coast: Riffrafs, Knife Rock, Hants Harbor Rock, White Rock, Arthur Rock, and Block Rock.

The Tail of the Bank has 6 fathoms water on it, and there are several other rocks with from 9 feet to 7 fathoms water on them, and all dangerous with a moderate sea.

The position of all the dangers is best seen by the chart.

Hants Harbor, one mile east of Hants Head, is 300 yards wide, 600 yards deep, and open to the north; a heavy sea sets into it during and after gales, causing an undertow at the east side, but a few vessels manage to lie here in safety during winter. The west point is low and rocky, with shallow patches extending $\frac{1}{2}$ mile NNE.

Light.—An octagonal tower, 30 feet in height, and painted white, stands on the east head of Hants Harbor, and exhibits, at an elevation of 65 feet, a fixed white light which should be visible 9 miles.

Directions.—Steer for Hants Harbor church bearing S. 18° W. (S. 47° W. mag.), or with the lighthouse S. 6° W. (S. 35° W. mag.), between the Tail of the Bank and the Riffrafs; the latter under ordinary circumstances will be seen breaking. When Seal Rock, off Seal Cove Point, is in line with that point, bearing S. 67° E. (S. 38° E. mag.), steer about S. 24° E. (S. 5° W. mag.) for the highest coast hill between the harbor and Seal Cove, to avoid the shoal which extends from the west point of entrance; when Seal Rock is in line with Salvage Point, N. 57° E. (N. 86° E. mag.), bring the church to bear S. 45° W. (S. 74° W. mag.), appearing

one-third across the entrance, and enter the harbor in mid-channel, anchoring near the west shore in 4 fathoms water.

The harbor should not be attempted by a stranger.

Ice.—Hants Harbor is rarely frozen over; field ice appears about 1st April, but the date of its disappearance is uncertain; vessels begin to arrive about the middle of April, the last vessel leaving about 25th December.

Tides.—It is high water, full and change, in Hants Harbor at 7h. 13m.; springs rise 4 feet, neaps rise 2½ feet.

Scilly (Sillee) Cove, 4¼ miles to the southwestward of Hants Harbor, is ¼ mile deep and 400 yards wide at the entrance, narrowing gradually to the head. This is a fine boat harbor, though exposed to the NW., and a considerable settlement is situated round it, with a few hundred inhabitants and a church. Some rocks lie close off the east point.

(H. O. Chart No. 584.)

Sugarloaf, a conspicuous cone 415 feet high, lies to southward of Scilly Cove, and is bold-to; Turks Cove, immediately south of Sugarloaf, is an open bight containing a few houses.

New Perlican Harbor is separated from Turks Cove by Jeans Head, a bold bluff sloping from a hill 280 feet high. Garlep Point, south of the entrance, lies 1,600 yards SSW. from Jeans Head, and is steep-to. The east shore is straight and bold-to, but the south has two coves. Fitters Cove, the outer, is ¼ mile deep, open, and exposed, with shoal water skirting the shores. The harbor proper is the easternmost, being 700 yards deep and 400 yards wide at the entrance, narrowing gradually to the head, from which shoal water extends 350 yards. This place is fit for fishing craft only, which can anchor in 3 fathoms near the north shore, to avoid a rock with 4 feet water a short distance off the first fishing stages in, on the east shore. Larger vessels may find anchorage off the entrances of these coves, in 8 fathoms, and with Bloody Point, that divides the coves, bearing S. 29° E. (South mag.).

Tides.—It is high water, full and change, in New Perlican Harbor at 7h. 30m.; springs rise 4 feet, neaps rise 2½ feet.

Coast.—The coast from Garlep Point to Hearts Content, 2 miles south, is of low cliff, and should not be approached within 200 yards from the points. Bacon Cove Head, a conical wooded eminence 132 feet high, lies 1,200 yards north of the entrance to Hearts Content.

White Rock, with 6 fathoms water, lies ¼ mile N. 40° W. (N. 11° W. mag.) from Norther Point. Sugarloaf, well open of Garlep Point, bearing N. 32° E. (N. 61° E. mag.), leads west, and Hearts Content Church, open of Norther Point, S. 58° E. (S. 29° E. mag.), leads south of White Rock.

Hearts Content Harbor.—The entrance to this harbor is 10 miles south of Hants Harbor, and is 800 yards wide between Norther Point on the east, on which is a beacon painted white, and Souther Point on the west. Thence it runs in $1\frac{1}{4}$ miles, and opens out in the middle to a mile wide, with soundings varying from 7 to 20 fathoms. The town lies along the eastern shore; behind it is a large lake, and Mizen Hill, which rises more than 670 feet high.

Submarine Telegraph Cables.—There are four submarine cables between Hearts Content and Valencia, and every spring, as soon as the harbor is clear of ice, three buoys, painted red and white, are laid down; two giving the north and south line of the Atlantic telegraph cables, and the third to mark the east and west line of the cables.

Anchorage.—The beacons around the harbor denote the anchorage limits.

To avoid fouling the cables, vessels should not anchor west of the line of the two south beacons in line, or between the following marks: East beacon, open south of Fisherman Hall (a conspicuous gabled building on the south side of the north bight), bearing S. 85° E. (S. 56° E. mag.), and striped house in line with the whitewashed bowlder, N. 83° E. (S. 68° E. mag.); the south cable is laid on the latter mark. Small vessels may anchor to the southward of the southern buoy.

Ice.—Hearts Content generally freezes over between the end of January and middle of February and clears about the latter end of March. The northern ice usually arrives about the middle of April and leaves about the middle of May.

Tides.—It is high water, full and change, in Hearts Content Harbor, at 7h. 33m.; springs rise 4 feet, neaps rise $2\frac{1}{4}$ feet.

(H. O. Chart No. 1102.)

Hearts Desire, an open cove 7 miles southward of Hearts Content, affords anchorage only with offshore winds in 6 to 13 fathoms, as convenient. A reef extends 200 yards from a low point in the middle of the south side. Gannet Point is the south point of entrance.

Gannet Rock, with 5 fathoms water, is small and lies $1\frac{1}{4}$ miles S. 77° W. (N. 74° W. mag.) from Gannet Point. Sugarloaf in line with Shuffle Board, N. 32° E. (N. 61° E. mag.), leads east of the rock. Hanging Hill, 650 feet high, lies $2\frac{1}{4}$ miles inland from Hearts Desire, and shows prominently from Trinity Bay.

Ice.—Hearts Desire freezes in February or early in March and clears in the latter month; field ice arrives about 15th April and leaves about 8th May, arriving later and leaving sooner according to the season.

Hearts Delight, $2\frac{1}{2}$ miles south of Hearts Desire, is a snug harbor $\frac{1}{2}$ mile in diameter, affording excellent anchorage in 7 fathoms just within the entrance. A shoal spit, with $2\frac{1}{2}$ fathoms water on it, extends 425 yards from the north shore near the head, leaving a passage only 300 yards wide between the end of the spit and a low point on the south shore. The settlement here possesses a church and schoolhouse. Shoal water extends 300 yards from the west point of the entrance. The Lookout, a hill 590 feet high, lies $1\frac{1}{2}$ miles SSE. from this harbor.

South Rock, with $3\frac{1}{2}$ fathoms water, lies nearly $\frac{1}{2}$ mile N. 77° W. (N. 48° W. mag.) from the south head of Hearts Delight.

Coast.—The coast trends southerly from Hearts Delight $1\frac{1}{2}$ miles to Long Point. Some rocks lie between them off Island Cove, a shingle beach situated nearer Hearts Delight. From Long Point it takes a bend S. by E. $1\frac{1}{2}$ miles to Shoal Harbor, an open bight, the south entrance point of which is, foul some distance from the shore, and around which are a few houses containing a few inhabitants.

Shoal Rock, with 9 feet water, lies 600 yards from the south entrance point of Shoal Harbor.

Witless Bay, just south of Shoal Harbor, is 2 miles wide at the entrance and nearly $1\frac{1}{2}$ miles deep, divided at the head into two portions by Middle Point, a bold projection. Red Rocks, a small cluster 110 feet high, lie in the entrance of the bay 1,200 yards from the north point.

Witless Rock, with 4 feet water, lies $\frac{1}{2}$ mile S. 29° E. (South mag.) from Red Rocks, and is the highest part of a bank that, with less than 10 fathoms water, extends nearly $\frac{1}{2}$ mile east from it.

Anchorage may be had with shelter from offshore winds as convenient, the water shoaling gradually from 17 fathoms in the entrance to 8 fathoms near the head; taking care to avoid the bank round Witless Rock.

Black Point, the south head of Witless Bay, is the extreme of a promontory 50 feet high that separates the entrances of that bay and Greens Harbor, and has rocks extending some distance from it.

Black Rock, with 6 fathoms water, lies 1,400 yards S. 86° W. (N. 65° W. mag.) from Black Point.

Greens Harbor extends SSE. $1\frac{1}{4}$ miles. It is 1,200 yards wide and free from danger, the water shoaling gradually from 9 fathoms in the entrance to 5 fathoms at the head, but is exposed to north-westerly winds. A large village surrounds the head; it contains a church and about 300 inhabitants. The south point is the termination of a narrow promontory, 240 feet high, that divides the harbor from Hope-all Bay, and is continued by shoal water 400 yards from the north extreme.

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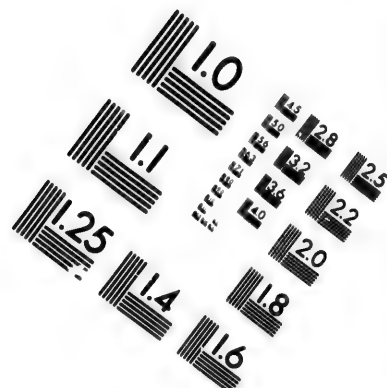
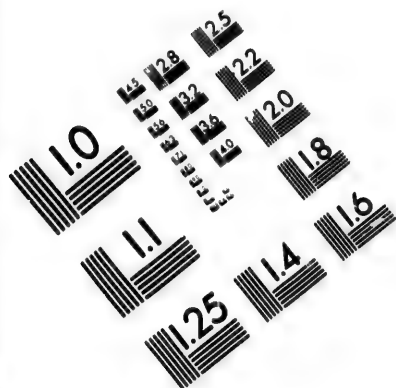
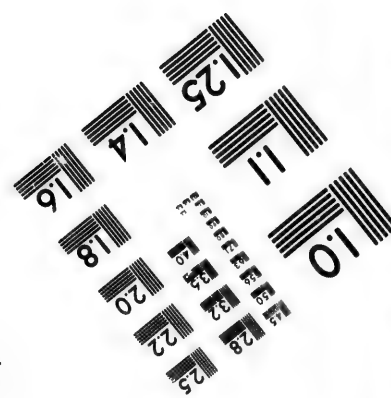
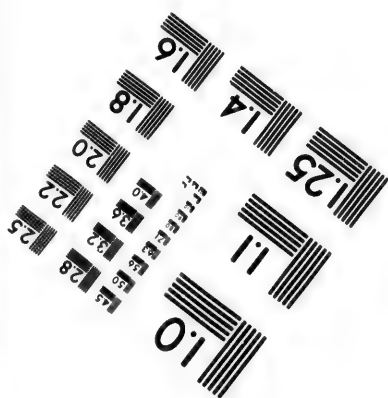
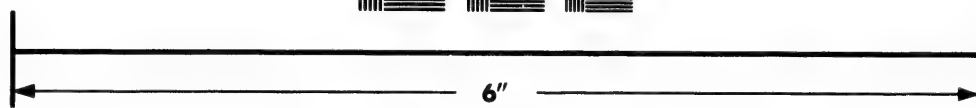
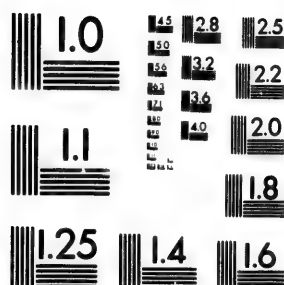


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Tides.—It is high water, full and change, in Greens Harbor at 7h. 44m.; springs rise $3\frac{1}{2}$ feet.

Hope-all Island, 75 feet high, lies 700 yards west of the extreme of this south point, and the passage between them should not be taken, but the island is bold-to on the north and west sides.

Hope-all Bay may be readily recognized by Hope-all Head, a remarkable bluff 407 feet high that forms the south point of the entrance. This bay is $2\frac{1}{2}$ miles deep and nearly $1\frac{1}{2}$ miles wide at the entrance, narrowing to the head, which is $\frac{1}{2}$ mile broad. After entering, the water deepens to 22 fathoms, and then shoals gradually to the head, where anchorage may be had in 9 fathoms, with shelter in all winds but those from WNW. to north.

New Harbor is a little more than a mile deep, $\frac{3}{4}$ mile wide at the entrance, and narrows gradually to the head, but is nearly filled with rocks. Fishing craft, however, find good shelter within these rocks, and a large village is built at the head.

Dildo Arm, close south of New Harbor, is the southeastern harbor in Trinity Bay.

Dildo Islands, a group nearly a mile long, narrow, and 60 feet high, lie in the continuation of the promontory forming the west side of the arm, $\frac{3}{4}$ mile distant, and the same distance west of the north point of the entrance, which is surmounted by a round hill, 150 feet high, that shelters Dildo Cove, just within the arm, where the settlement is situated. Rocks surround the islands for a short distance, and not more than 7 fathoms can be carried in mid-channel over the bar joining the islands to the south point of the arm. The arm is about 2 miles long and one mile wide, with deep water for the most part, and divided at the head into two coves by a point, from which shoal water extends 300 yards. The west shore should not be approached within 300 yards.

Communication.—There is railway communication with St. Johns. The station is at Broad Cove, distant $66\frac{1}{2}$ miles from St. Johns and 3 miles from Dildo.

Anchorage.—Anchorage may be obtained off Dildo Cove in 8 fathoms water, with shelter from easterly winds; or off the eastern of the two coves at the head in 12 fathoms; with shelter from all winds but those from NW. to North. The northern of the two coves is shoal.

There is a cod hatchery on one of the Dildo Islands, and the artificial propagation of lobsters is carried on.

Ice.—Dildo Arm freezes occasionally about the middle or end of February and clears about the middle or end of March. In 1884 the whole of this part of Trinity Bay, south of a line joining Tickle Harbor Point and Hope-all Head was frozen and remained so for about a week, and in 1887 an iceberg remained in this part of the

bay until 9th August, which is the latest known date. Northern ice arrives about every five years, and generally in April, but seldom remains a week.

Tides.—It is high water, full and change, in Dildo Arm at 6h. 40m.; springs rise $4\frac{1}{2}$ feet.

Spread Eagle Bay, west of Dildo Arm, is nearly 2 miles wide at the entrance, and is divided into two bights by a point, from which a ledge, with 5 fathoms water on the outer edge, extends nearly $\frac{1}{2}$ mile. Anchorage with shelter from offshore winds may be had in the east cove in 12 fathoms, sand, and for small vessels in the west cove in 6 fathoms.

McLeod Point divides Spread Eagle Bay from Chapple Arm and is bold beyond a short distance. Chapple Head lies NW. $1\frac{1}{2}$ miles nearly from McLeod Point, and is the sharp termination of a flat-topped bluff 350 feet high.

Chapple Arm extends S. by W. a little more than 3 miles, has no danger beyond a short distance from the shore, and affords no anchorage for large vessels. A group of narrow islands and rocks extends 800 yards from a little promontory on the east shore, $1\frac{1}{2}$ miles within McLeod Point, and shelters a small boat harbor. An islet with rocks off it east and west lies nearly a mile beyond the group, and near the head is Mooring Island, small and steep-to. Small vessels may find anchorage off the eastern cove at the head in $3\frac{1}{2}$ to 12 fathoms, according to their length, but the western cove is shoal.

Long Cove, north of Chapple Head, is open and free from danger.

Communication.—There is railway communication with St. Johns, distant $77\frac{1}{2}$ miles, by the Northern and Western Railway.

Cottier Bay is separated from Long Cove by Cottier Point, the extreme of a promontory 250 feet high, sloping from a hill 658 feet high, south of the head of the bay. This bay is open and exposed, but affords anchorage with shelter from offshore winds in 10 fathoms, sand, $\frac{1}{2}$ mile from the head.

Conception Bay.—Conception Bay, entered between Broad Cove Head and Cape St. Francis, a distance of $11\frac{1}{2}$ miles, has a SSW. direction for $1\frac{1}{2}$ miles to the Head of Holy Rood Bay. The western shore of Conception Bay is indented by numerous smaller bays. The coast from Split Point to Broad Cove Head is clear, with the exception of the following offlying dangers. Wall Rock, with 5 fathoms water over it, lies $1\frac{1}{10}$ miles N. 73° W. (N. 44° W. mag.) from the SW. point of Baccalieu Island; Job Rock, with 5 fathoms on it, $1\frac{1}{2}$ miles N. 86° E. (S. 65° E. mag.) from Gull Island (south of Job Cove), and Puddy Rock, with 5 fathoms on it, $\frac{1}{2}$ mile N. 22° E. (N. 51° E. mag.) from Western Bay Head.

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Ice.—Conception Bay fills with ice between 16th January and 1st March, and clears between the middle of March and 20th April, but ice has remained till 25th May. Occasionally very little ice enters the bay.

Salmon Cove Head.—At 14 miles W. by S. from Cape St. Francis is Salmon Cove Head, on the west side of Conception Bay. From this head the land trends SW. by S. 3 miles to Crockers Point, on the north side of entrance to Carbonear Bay, the coast between being steep, in places cliffy, and the hill rising 490 feet high. There are several small fishing villages; the principal are Clements, Freshwater, and Crockers, at the entrance of three ravines.

Several small islets and rocks lie off this part of the coast. Folly Rocks form a small ridge above the water, about $\frac{1}{4}$ mile south of Salmon Cove Head, and 100 yards from the shore. Mad Rock is small, above water, and lies 300 yards northeastward of the Harton Rocks off Clements Cove. A small chain of rocks or islets forms the south side of Clements cove, and terminates in a rock awash at low water; the rocks are named Harton Rocks, and separate Clements Cove from Freshwater Cove. Bradley Rock is small and above water; it lies nearly midway between the extremity of Harton Rocks and Maiden Island, a little without the line of direction.

Maiden Island is 49 feet high, but, being small and the same appearance as the cliffs of the coast, it is not easily distinguished. Halfway between it and Crockers Point are some rocks above water. 135 yards from the shore.

(H. O. Chart No. 585.)

Crockers Cove is immediately north of Crockers Point, on the north side of entrance to Carbonear Bay; rocks and shallow water extend 200 yards eastward of it.

Carbonear Island is 1,200 yards in length NE. by E. and SW. by W., 400 yards in breadth, 169 feet high, and slopes to the westward; its coast is mostly cliff.

Light.—On the summit of Carbonear Island a building, which has a tower on a gable 45 feet in height and painted white, exhibits a fixed white light at an elevation of 195 feet, which should be visible 16 miles.

Mosquito Cove, SW. of Carbonear Island, is formed by Mosquito Point and Old Sow Point; it is about 800 yards wide at the entrance and 1,600 yards deep; the water shoals gradually to its head, but it affords no shelter or safe anchorage.

Carbonear Bay, immediately west of the Island of the same name, is $1\frac{1}{2}$ miles deep in a west direction, and $\frac{1}{4}$ mile wide, with

bold shores, except at the head, where it shoals gradually to a shingle beach. The entrance is easily recognized by Carbonear Island and lighthouse, also by Saddle Hill, 503 feet high, and the most remarkable land seen from seaward, immediately south of it.

Communication.—There is telegraphic communication with St. Johns, also roads to Hearts Content and Harbor Grace.

Anchorage.—The anchorage in Carbonear Bay is off the north shore, in from 7 to 10 fathoms water, over sand; although open to the sea, which rolls in heavily with easterly gales, many vessels of about 100 tons winter in safety at the wharves of the town. The center and south side of the bay is exposed to the sea and should be avoided.

Directions.—From the northward there are no dangers when entering Carbonear Bay in ordinary weather, except those off the coast between Salmon Cove Head and Crockers Point, which are all visible, and may be avoided by keeping Broad Cove Head open of Folly Rocks, bearing about N. 29° E. (N. 58° E. mag.). During heavy seas from the eastward, Kane Rock, with 9 fathoms water on it, and Saucy Joe Rock, with 11 fathoms on it, break occasionally.

Between Carbonear Island and Mosquito Point the distance is $\frac{1}{2}$ mile, but the channel is narrowed to 200 yards by sunken rocks extending from the island and point. To proceed through in 4 fathoms water, keep the Haypuk on Feather Point just shut in with the cliff of Old Sow Point, bearing S. 13° E. (S. 16° W. mag.).

Ice.—Carbonear Bay freezes only in severe winters, as the swell breaks the ice up.

Tides.—It is high water, full and change, in Carbonear Bay at 7h. 20 m.; springs rise $4\frac{1}{2}$ feet, neaps rise 3 feet.

Feather Point, on the south side of entrance to Harbor Grace, is the termination of a ridge of hills over the south side of the harbor; the extremity of the point is a mass of slate, just disconnected by a rent from the main body of the point, and called the Haypuk.

Harbor Grace Islands, off Feather Point, are a cluster of small islets and rocks, covering a space of about $\frac{1}{2}$ mile, in the direction of the point, by $\frac{1}{2}$ mile in breadth. The principal islet is 105 feet high, and on the western islet is a summer fishing village. Between 200 yards and 400 yards NNE. of Harbor Grace Islands are other islets or rocks, the outer of which is called Eastern Rock; and beyond them is rocky ground, with 4 fathoms water on it, named White Rock, on which the sea breaks with great violence.

At 400 yards west of the south end of Harbor Grace Islands are Ragged Rocks above water, and between them and the shallow

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grounds off Feather Point is a channel 400 yards wide, with 3 and 4 fathoms water, but a stranger should not attempt this passage, as there is no good leading mark for it.

Light.—On the north island a square wooden house painted white, with lantern over the center, 35 feet in height, exhibits, at an elevation of 151 feet, an intermittent red and white light alternately about 14 red and 14 white flashes every minute. The light should be visible 15 miles, but being unwatched it is unreliable.

Salvage Rock.—Long Harry Rock, on the north shore of the entrance to Harbor Grace, is 72 feet high and situated $\frac{1}{4}$ mile SW. of Old Sow Point; S. by E. $\frac{1}{4}$ mile from Long Harry is Salvage Rock, small and 53 feet high, with deep water round it, but a heavy sea breaks 65 yards inside it.

Harbor Grace.—From a line between Old Sow and Feather Points, Harbor Grace extends $4\frac{1}{4}$ miles SW. by W., with a breadth of $1\frac{1}{4}$ miles at the entrance to $\frac{1}{4}$ mile at its head, the hills on either side rising 500 feet above the sea.

The town, on the north shore of the harbor, is clean and well laid out, and has an abundant water supply from a lake in the neighborhood. There are large stores for dried codfish, machinery for the manufacture of seal oil, and refining cod-liver oil; also for preparing boneless codfish, tinning caplin, and making glue from skins, and guano from bones of the fish. In 1891 the population was 6,466.

The Roman Catholic church is the easternmost of three churches; it has two spires which are in line bearing N. 61° E. (East mag.) and S. 61° W. (West mag.).

Light.—At the outer end of Point of Beach, which is composed of shingle, is a hexagonal-shaped wooden tower, 38 feet in height, and painted white, from which, at an elevation of 40 feet, a fixed white light is exhibited, which should be visible 7 miles.

Bar.—At 1,200 yards eastward of the harbor light a bar stretches across the harbor. The greatest depth on it is 24 feet, and the least depth 9 feet; the latter over a boulder bank forming the south side of the main channel. Between the bank and south shore the depth is 13 feet. In heavy weather the sea breaks on the shoal part of the bar, but seldom in the 24-foot channel.

Communication.—There is communication with St. Johns, distant 83 $\frac{1}{4}$ miles, by the Newfoundland Railway; telegraphic communication, and a good road to Hearts Content via Carbonear, distant 16 miles.

Buoys.—A buoy, painted white, is moored on the west edge of the boulder bank.

A buoy, painted red, is moored on the edge of the shoal ground off the north shore in $11\frac{1}{2}$ feet water, with Point of Beach Lighthouse 400 yards S. 61° W. (West mag.).

As these buoys are only moored with small anchors, their positions can not be relied upon. During winter they are removed and spar buoys substituted.

Patent Slip.—There is a patent slip 90 feet in length and 16 feet in breadth, which will take vessels up to 110 feet length of keel; a vessel of about 200 tons has been taken up. The depth on the blocks at high water, ordinary spring tides, is 9 feet forward and 12 feet aft.

Directions.—When entering Harbor Grace, give Eastern Rock, off Harbor Grace Islands, a berth of 600 yards by keeping the spires of the Roman Catholic church at the east end of the town open north of Salvage Rock, bearing S. 62° W. (N. 89° W. mag.); this clears White Rock, passing to the northward; thence steer in mid-channel, passing either north or south of Salvage Rock. To cross the bar in the deepest water, bring the lighthouse, on Point of Beach to bear S. 62° W. (N. 89° W. mag.) and in line with Ship Head, a hill 98 feet high on the same shore a long mile beyond it. The point of the Boulder Bank will be passed when the west shoulder of Greens Hill (443 feet high) is in line with the west spire of the Roman Catholic church at the east end of the town, bearing N. 56° W. (N. 27° W. mag.), and Long Harry in line with the extreme of the land NE. of it, bearing N. 41° E. (N. 70° E. mag.), clears the shoal water off the north shore. Therefore do not shut in the point east of Long Harry with that rock, but edge southward to avoid the shore bank east of Point of Beach. This point is steep-to on its south side.

At Night, run in with the light at Point of Beach, bearing S. 56° W. (S. 85° W. mag.), until Harbor Grace Islands Light bears about S. 75° E. (S. 46° E. mag.); then steer more to the southward to avoid Salvage Rock, until the Point of Beach Light bears S. 62° W. (N. 89° W. mag.), then proceed as before.

The harbor is safe, although the most violent winds are from the westward, and blow occasionally with much force. The best anchorage is on the north shore, as at times the sea is rough on the south.

When working in, Brennans Hill, 392 feet high, and southward of Greens Hill, in line with the east spire of the Roman Catholic church, bearing N. 78° W. (N. 49° W. mag.), leads northward of the bar; and the west shoulder of Greens Hill, in line with the west spire of the same church, N. 56° W. (N. 27° W. mag.), leads southward of the Boulder Bank. In crossing the bar, the point east of Long Harry should not be shut in with that rock, and

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short tacks should be made between this line and the line of the leading marks, until Greens Hill is seen westward of the church, when the board to the southward may be prolonged. There is no tidal stream in Harbor Grace to assist a vessel either in or out.

Ice.—Harbor Grace freezes over between 10th January and 20th February, and is closed, at intervals, by ice, from 6 to 15 inches in thickness, between 20th January and the end of March, but the port has never been closed for more than six weeks at a time, and the harbor ice sometimes disappears as early as 1st March, remaining at other times as late as 1st April. Vessels arrive and leave all the year, but are occasionally detained by field ice, which appears from 20th January to 20th February, and disappears between 1st and 20th May, but in some seasons is never seen.

Tides.—It is high water, full and change, in Harbor Grace at 7h. 25m.; springs rise 4½ feet, neaps rise 3 feet.

Bryants Cove, on the south side of Feather Point, is 700 yards wide and about 800 deep, with several patches of rocks near the center that cover at half tide. The entrance is by the south shore, or by having a conspicuous hill, up the valley, open of a steep fall of the north shore of the inner part of the bay, bearing S. 64° W. (N. 87° W. mag.); but the cove is open to seaward and affords no shelter.

Spaniards Bay.—Spare Point, on the south side of Bryants Cove, has several detached rocks above water near it, thence the coast trends in a SW. direction for 2 miles to Island Cove, a rocky bight, fronted by an islet. Spaniards Bay is one mile wide, and extends 3½ miles to the southwestward; its north shore is clear of danger.

Green Head, at the head of the bay, is 112 feet high; the only safe anchorage is on the north shore NE. of this point, in from 4 to 8 fathoms water, keeping Green Head westward of the bearing S. 15° W. (S. 44° W. mag.) to avoid a shoal patch with a depth of 9 feet on it. The southern shore is exposed to a heavy sea, which sets in with easterly gales, and the eastern part has several rocks extending 200 yards from it; farther in the water is shoal the same distance off, and at the head of the bay to nearly 400 yards.

Communication.—There is a station on the Newfoundland railway at Spaniards Bay Road, distant 76 miles from St. Johns.

Tides.—It is high water, full and change, in Spaniards Bay at 7h. 45m.; springs rise 4½ feet, neaps rise 3 feet.

Mad Point is the eastern termination of a peninsula 4 miles in length, 800 yards in breadth, and separating Spaniards Bay from Bay Roberts. Mad Rocks, 12 feet above water, extend eastward about ½ mile from the north extreme of the Point; and broken ground with less than 10 fathoms over it 1,200 yards farther, over

which during an easterly swell the sea rolls up to the dry rocks and breaks over them with violence. There are 20 fathoms $1\frac{1}{4}$ miles ENE. of the point; in bad weather it should not be approached when bearing S. 59° W. (S. 88° W. mag.) nearer than a mile. Jugglers Cove is a small boat harbor formed by some rocks 1,200 yards SW. of Mad Point.

Bay Roberts is formed between the peninsula just mentioned and another peninsula on the south. It is about $3\frac{1}{4}$ miles in length and nearly a mile in breadth. Fergus Islet, 134 feet high, 400 yards in length NE. and SW. and 200 yards in breadth, with a round summit, lies 400 yards from the north shore and about a mile from Mad Point. There are 15 fathoms water between the islet and the shore, but NW. 200 yards from its SW. end is a rock with less than 6 feet on it, and rocks extend 200 yards off its NE. end.

Telegraph.—There is a station at Bay Roberts.

Coldeast Point is a projection dividing the head of Bay Roberts into two parts. It is surrounded by rocks at the distance of 200 yards, which cover and uncover. At 200 yards E. by S. of the point is a patch of rocks with 12 feet water and 5 fathoms between it and the point. There are a church and a few houses scattered over this projection.

To the north of Coldeast Point is Roberts Harbor, a safe anchorage and easy of access. It runs in a mile with an average breadth of 400 yards, the water shoaling gradually from 10 fathoms at the entrance, muddy bottom and good holding ground. On the north shore of the harbor is the town, with two churches and fishing establishments. Vessels drawing 12 feet water can lie at the wharves at any time of tide.

The south shore of Bay Roberts is foul for 200 yards off, and there is no safe anchorage on this side of the bay.

Ice.—Bay Roberts freezes occasionally, when the bay fills with ice.

Green Point is the termination of the narrow peninsula, 4 miles in length, separating Bay Roberts, on the north, from Bay de Grave, on the south. Close off it are Southern Rocks, 14 feet above water, and broken ground extends 400 yards from the point.

Lights.—A cylindrical iron lighthouse, 32 feet in height, painted red and white in horizontal bands, stands on Green Point, and exhibits, from an elevation of 56 feet, a fixed white light, which should be visible 8 miles.

Beneath the principal light is a projecting lantern, from which three lights are exhibited. The two outer lights show white, and the center light, in line with Southern Rocks, bearing S. 17° W. (S. 45° W. mag.), shows red.

Bay de Grave is $5\frac{1}{2}$ miles in length SW. by W., with an average breadth of $\frac{1}{2}$ mile. In the middle of the entrance the water is 70 fathoms deep, shoaling to 30 fathoms at a mile from the head of the bay. Hibbs Hole is a rocky cove south of Green Point, but affords no shelter. Blow-me-down Head, $1\frac{1}{2}$ miles SSW. of Green Point, projects 200 yards beyond the line of coast, and $\frac{1}{2}$ mile beyond it is Ship Cove, a little sheltered by the head, and in summer small vessels may anchor off it in 10 fathoms water, with Port de Grave church, which is midway between Ship Cove and Port de Grave, N. 64° W. (N. 35° W. mag.).

Port de Grave, having a depth of 6 to 9 feet, is $\frac{1}{2}$ mile westward of Blow-me-down Head, and fronted by some low islets or rocks. Shoal water extends 200 yards eastward from the southern rocks. Off the village is a summer anchorage for small vessels in 10 fathoms water, 140 yards from the shore, with the church bearing between N. 34° W. (N. 5° W. mag.) and N. 11° W. (N. 18° E. mag.).

The coast westward of Port de Grave is cliffy as far as Bareneed, $2\frac{1}{2}$ miles from Blow-me-down Head. From the village of Bareneed round the head of the bay to Cupids Cove, on the south, there are no dangers nor sheltered anchorages. Two streams here empty, one at the north, the other at the south corner of the beach; they are named the North Gut and South Gut; both can be entered by boats at high water, and are navigable a considerable distance.

Cupids Cove, on the south side of a remarkable bluff, 330 feet high, named Spectacle Head, runs in about $\frac{1}{2}$ mile, and is 400 yards wide. There is anchorage here for small vessels in from 3 to 8 fathoms, mud and sand; though open to seaward, but little sea sets in. A shoal bar crosses the harbor from the east extreme of a shingle spit on the east shore.

Burnt Point is the south point of entrance to Bay de Grave; it is 181 feet high, with small coves north and south of it. Sopers Rock, with less than 2 feet water on it, lies 200 yards north of the north extreme of the point. On the south side of the point, at about the same distance, are other rocks, with 6 feet on them and some uncovered. A vessel should not approach nearer than $\frac{1}{2}$ mile.

North Head, the north entrance point to Brigus Bay, is nearly $1\frac{1}{2}$ miles south from Burnt Point.

Light.—On North Head a cylindrical iron tower, 24 feet in height, painted red and white in vertical stripes, exhibits, from an elevation of 113 feet, a fixed red light, which should be visible 12 miles.

Brigus Bay stretches one mile to the westward, with an average breadth of 800 yards. The sealing vessels belonging to Brigus moor head and stern in the NW. corner of the bay, and under

Admirals Island, in the SW. corner; but these anchorages should not be attempted without local knowledge.

The town of Brigus, with a population of 1,541, is small and picturesquely situated round the shores of a lake in a valley between steep barren hills, and is important on account of the early release of sealing vessels in the spring, from the ice being broken up by the sea setting into the bay.

Communication.—There is railway communication via Brigus Junction, distant $47\frac{1}{2}$ miles from St. Johns and 7 miles from Brigus; also telegraphic communication.

Ice.—Brigus Bay freezes occasionally, when the bay fills with ice.

(H. O. Chart No. 1102.)

Colliers Point, $1\frac{1}{2}$ miles S. by E. from south point of Brigus, is the extreme of a peninsula separating Colliers and Gastries Bays.

Colliers Bay extends in a straight line SW. by S. $3\frac{1}{2}$ miles from Colliers Point, and is entered between that point and Seal Head, a steep bluff at the extreme of the slope from the Twins. Turks Head, on the west shore, $1\frac{1}{2}$ miles to the southwestward of Seal Head, is a steep bluff 337 feet high, forming the south side of Turks Gut, a narrow inlet bordered by a few houses. Harbor Rock, awash at low water, lies 750 yards S. 27° E. (S. 2° W. mag.), and Bull Rock, with 6 fathoms water, N. 54° E. (N. 83° E. mag.), a little more than $\frac{1}{2}$ mile from the extreme of Turks Head. Blue Hills, seen over Dock Head, bearing S. 23° W. (S. 52° W. mag.), leads east of these rocks.

The remainder of the west shore is straight, and may be approached to 100 yards, till the shallow water is met with at 400 yards from the head. The east shore is slightly indented, James Cove, the first in on that shore, being sheltered by a small projection 82 feet high. The next cove to the southward, at the head of which is a shingle beach bordered by houses, is filled with bowlders under water to the line of the points. Curtain Rock, with 10 fathoms, lies 300 yards off the east coast, under the first hill within the entrance, and a shoal with 7 fathoms water lies nearly in mid-channel $1\frac{1}{4}$ miles from Turks Head. Dock Head, a small peninsula 134 feet high, situated $2\frac{1}{4}$ miles from the entrance, forms the west side of a shallow cove, is bold-to on the west side, and shelters The Dock, a small cove. Anchorage may be had west of Dock Head in 4 to 10 fathoms, gravel, exposed to northeasterly winds only.

Coast.—The coast from Colliers Point is skirted by rocks, and trends southward 2 miles to Bacon Head, a steep bluff surmounted by a hill 326 feet above high water, that makes the south side of

Bacon Cove, an open bight containing several rocks. A small rock lies close off Bacon Head, and, with the coast, may be approached to within 200 yards.

Gastries Bay extends $2\frac{1}{2}$ miles SW., with a breadth of $\frac{1}{10}$ mile from Bacon Head to a projection ending in Cat Rock, that divides the head into two coves.

Cat Cove, the northern of the two, is 1,600 yards deep and 600 yards wide; it is again subdivided at 800 yards within by Paw Point, a narrow promontory forming two coves about 300 yards wide. Mouse Rock, with 2 feet water, lies in the entrance to Cat Cove, about 200 yards from the north shore.

Anchorage may be had in 8 fathoms, sand, off the church, for small vessels, but exposed to NE. winds.

Salmon Cove, the southern bight of Gastries Bay, is $1\frac{1}{5}$ miles deep and 1,200 yards wide at the entrance, terminating in an inlet 300 yards wide, entered 1,100 yards from the head. This inlet is filled with rocks and is available only for boats. The outer portion of Salmon Cove is clear of danger at 200 yards from the shore.

Communication.—There is a station on the Newfoundland Railway at Salmon Cove, distant $38\frac{1}{2}$ miles from St. Johns.

Blue Hills form a conspicuous range, surmounted by a double top 839 feet high, and are situated 2 miles from the head of Gastries Bay. Witch Hazel Peak, 598 feet high, lies $\frac{1}{2}$ mile northward of Blue Hills, and is the first conspicuous peak in that direction.

Gastries Point is the extreme of a peninsula dividing Gastries Bay from Harbor Main. The west shore of this peninsula from Salmon Cove is skirted by shoal water extending off 200 yards, and the point should not be approached within that distance.

Harbor Main extends S. by W. 2 miles from Gastries Point, and is clear of danger, except a rock with 12 feet of water lying 350 yards N. 43° E. (N. 72° E. mag.) from the point SSE. of the church. A considerable settlement is situated on the west shore, and vessels can find anchorage in 12 fathoms with the church bearing N. 29° W. (North mag.), having swinging room of 250 yards, but exposed to NE. winds.

Holy Rood, east of Harbor Main, is 4 miles long and $\frac{1}{2}$ mile broad. The west shore is foul for a mile from the entrance, and should not be approached within 200 yards. A shoal with 12 feet water lies off the mouth of Chapel Cove, the first indentation on the west shore, beyond which there is no danger; but the water is deep till the two coves at the head are entered.

Communication.—There is railway communication with St. Johns, distant 33 miles, by the Newfoundland Railway.

Tides.—It is high water, full and change, in Holy Rood Anchorage at 7h. 28m.; springs rise $4\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet.

Coast.—The coast from this bay trends with a deep bend NE. by N. 25 miles to Cape St. Francis. The southern part consists of a series of beaches backed by salt-water ponds, and skirted by shoal water nearly $\frac{1}{4}$ mile from the shore. Several villages with churches are built on the shore, and this portion of the bay is one of the most picturesque in Newfoundland. Butter Point a conspicuous hill 999 feet high, lies eastward of Holy Rood Bay, and the whole coast is backed by steep wooded hills 500 to 800 feet high.

Communication.—There is a railway station at Topsail, and between it and Holy Rood Bay, a distance of 15 miles, there are stations, on the Newfoundland Railway, at Duffs, Seal Cove, Keligrews, and Manuels.

Portugal Cove, 15 miles from Holy Rood, is the deepest indentation on the shore, being 800 yards deep, with a rock in the middle, and depths of water decreasing from 20 fathoms in the entrance to 5 fathoms near the head. Princes Lookout, a conspicuous hill 543 feet high, surmounted by a flagstaff, lies eastward of the head of this cove.

The character of the coast changes north of this cove from gentle partially cultivated slopes to steep barren cliffs, attaining the height of 880 feet in Ore Head, situated about midway between Portugal Cove and Cape St. Francis.

Bell Island, the largest of three lying off the east shore of Conception Bay, is so called from a remarkable conical rock, 220 feet high, situated near the SW. extreme, and named The Bell from the supposed resemblance. This island lies nearly parallel to the coast at the distance of 2 miles from Portugal Cove, is $5\frac{1}{4}$ miles long, nearly $1\frac{1}{2}$ miles broad, and surmounted by a nearly flat ridge 495 feet above high water. The Clapper, a prominent rock, lies at the south point, and a considerable village with a church is situated just NE. of it. Shoal water extends nearly $\frac{1}{4}$ mile from the NE. extreme, within which distance the shores should not be approached.

Bell Rock, with 15 feet water, lies nearly one mile S. 43° W. (S. 72° W. mag.) from The Clapper, and from the rock a ledge with 4 fathoms water extends $\frac{1}{4}$ mile to the northwestward.

Little Bell Island, 2 miles SE. by S. from The Clapper, is narrow, 1,200 yards long, 92 feet high, and is skirted by foul ground that extends about 400 yards from the shore.

Kelly Island, 183 feet high, lies $1\frac{1}{4}$ miles SW. by W. from Little Bell Island and $1\frac{1}{2}$ miles nearly from the south shore of the bay. A shingle spit extends from the SE. shore, and the island should not be approached within $\frac{1}{4}$ mile.

Cape St. Francis is formed by two low bills, off the westernmost of which are two small islets.

Light.—On the eastern bill of Cape St. Francis a wooden building with a flat roof, on which is a lantern painted white, and 45 feet in height, exhibits, from an elevation of 123 feet, a fixed red light, that should be visible 12 miles.

Fog Signal.—A fog trumpet will be sounded every minute during thick weather, fogs, and snowstorms, as follows:

Duration of sound, five seconds; of silence, five seconds; of sound, five seconds; of silence, forty-five seconds.

The Brandies are three rocks with 4 to 12 feet water on them, the extreme of rocky ground extending from some islets and rocks southeastward of the cape, from which the outer lies 1,600 yards N. 82° E. (S. 69° E. mag.). Torbay Point open of Black Head S. 16° E. (S. 13° W. mag.) leads east of The Brandies.

Coast.—The coast from Cape St. Francis to St. Johns Harbor is of nearly steep cliff, with two principal indentations. Pouch Cove, the northern, is nearly three miles from Cape St. Francis. Black Head, the southeastern point of this cove, is about 400 feet high. A shoal, with 6 fathoms water, lies $\frac{1}{4}$ mile off the north point of Pouch Cove, and Cliff Rock, with 8 fathoms water, lies one mile N. 17° W. (N. 12° E. mag.) from Black Head. Flat Rock Cove is a small indentation $3\frac{1}{4}$ miles south of Black Head, the south point of which is Flat Rock Point.

Red Head, 274 feet high, on the northern side of Flat Rock Cove, is very conspicuous, being of a deep red color; and one red house and three white houses, situated at an elevation of 455 feet on the hills about 2 miles west of Flat Rock Cove, also a church, painted red, the steeple of which is 284 feet above the sea, show out prominently, but the latter is obscured from the southward by the land sloping down to Flat Rock Point.

Flat Rock Point is a low, barren, razor-shaped ledge sloping down to the sea and continued, under water, for nearly 400 yards, where there is a depth of $4\frac{1}{4}$ fathoms; there are rocky ledges on the east side of it.

From Flat Rock Point the cliffs rise gradually as Tor Bay is entered, but at $1\frac{1}{4}$ miles from the point they rise more abruptly, and from here to Torbay Bight the coast line is broken by deep gulches and may be easily recognized by two hills, 444 and 446 feet high, having high cliffs in front of them; further south are two smaller cliffs 282 and 72 feet high, respectively.

Tor Bay is 2 miles deep and the same in breadth, and is quite exposed. Anchorage may be had with shelter from westerly winds off the western cove in 12 fathoms; elsewhere the water is too deep. In thick weather, or when the background hills are hidden, Torbay Point appears to slope from two round hills with a slight saddle between.

Torbay Bight, where there is a large settlement, is greatly used by fishermen, and landing can generally be effected. At $\frac{1}{4}$ mile inland, over the bight, there is a Roman Catholic church (a square stone building without a spire), a convent, and a temperance hall; these, being all close together, form a very conspicuous mark, but they are nearly obscured when in line with a clump of trees, (also conspicuous) over Snagge Point.

Tantam Shoals are about $\frac{1}{4}$ mile north of Torbay Point; they break in heavy weather.

Coast.—From Torbay Bight to Torbay Point the coast line is generally rugged, with broken cliffs between Middle and Outer Coves. Landing may be effected here, except with northerly winds, which send in a heavy swell. Behind Middle Cove there is a conspicuous white house, and the hills at the back of Tor Bay are covered with houses, generally painted white.

Torbay Point has a small summit, 287 feet high, just to the southward of it, and a little over $\frac{1}{4}$ mile farther south the land rises to a hill 537 feet high.

Torbay Hill, 653 feet high, locally known as Flag Staff Hill, on account of it having been the old signal station connecting Cape St. Francis and St. Johns, has bold cliffs in front of it, and a very conspicuous yellow patch, nearly at the top of the cliff, just to the northward of the summit of the hill.

Redcliff Head, $1\frac{1}{4}$ miles southward of Torbay Point, is a bold headland with steep sloping cliffs of a reddish color; it has a deep gulch on the north and on the south side of it, one or the other, depending on the light, being generally seen as a black band down the face of the cliff. Red Head Rock, with 5 fathoms water, lies 1,600 yards S. 47° E. (S. 18° E. mag.) from Torbay Point and 1,200 yards from Redcliff Head.

Logey Cove, used by fishermen during the summer months, is a small cove with deep water, and boats may land here in a small niche in the rocks, where there are always fishermen to help if necessary. A road connects this cove with St. Johns and Tor Bay.

On the eastern side of the cove is a small summit on which is built a beacon of stones; from this the land gradually rises until Sugarloaf Head is reached, the coast being very rugged, with several caves in it.

Sugarloaf Head, 554 feet high, is one of the most conspicuous objects on the coast; its face is a sheer cliff, and seen from the NE. it has the appearance of a gunner's quoin, while from the southward and eastward it makes as a cone-shaped hill. About a mile inland from Sugarloaf Head there is a conspicuous conical hill, 577 feet high, only seen from the northward.

Robin Hood Bay, between Sugarloaf Head and Small Point, is surrounded with high cliffs, has deep water, and no landing place.

Small Point is a rounded point with a summit over it, 318 feet high, and just to the southward of this is Skerrys Bight, where landing may be occasionally effected. Between Skerrys Bight and Quiddy Viddy Harbor is a very conspicuous cliff, at the foot of which a large cave is named Bawdens Hole. The height of the summit at the back of the cliff is 472 feet.

Quiddy Viddy Harbor has a rocky bar on which the depth is 3 feet, and is only suitable for boats. It may be easily recognized by Bawdens Hole, on the north, and Cuckold Head, on the south side. Cuckold Head, 390 feet high, is a conical hill, presenting that appearance when seen from any direction; between it and St. Johns Harbor is Cuckold Cove, in which the water is deep.

(H. O. Chart No. 1114.)

St. Johns.—The city of St. Johns, the capital of Newfoundland, and the seat of Government, covers the steep hilly ground on the NW. side of the harbor, and continues along the banks of the river and the SE. shore of the harbor. It has several handsome public buildings, of which the most conspicuous is the Roman Catholic cathedral.

The harbor, although small, is convenient and secure, having deep water and excellent holding ground. It is generally smooth, for, though near the open sea, the entrance is narrow and nearly at right angles to the harbor, which is shut in from the sea by high land on the south side.

Large vessels can be securely moored at the wharves which line both sides of the harbor. Galway wharf will take a vessel of from 25 to 27 feet draft alongside, the other wharves from 15 to 20 feet. On the wharves there are numerous oil vats, from which the stench is very unpleasant in the summer months, and stages for drying fish are placed in every available spot.

Communications.—Railway communication by the Newfoundland Railway with Harbor Grace, distant 83½ miles; with Placentia, distant 84½ miles, by the Placentia Railway; and with Exploits, distant 257½ miles, by the Newfoundland and Western Railway, this line being in course of construction to Port Basques, distant 550½ miles from St. Johns.

There is communication by sea by the following lines of steamships:

Allan Line, between Glasgow, Liverpool, and Philadelphia, call at St. Johns and Halifax fortnightly on the westward trip, and on the eastward trip at St. Johns only.

Canadian and Newfoundland Steamship Company, between Liverpool and Halifax, outward and homeward bound, touch every ten days at St. Johns.

Red Cross Line run between St. Johns and New York every ten days, calling at Halifax, and one of the steamers of this line visits Pilley Island in the summer, taking passengers.

Black Diamond and Ross Line, fortnightly and weekly, respectively, between St. Johns and Montreal.

There is fortnightly communication with St. Pierre and Bonne Bay; and between the end of April and December the Newfoundland Coastal Steamship Company's steamers run to Battle Harbor, where they connect with the Labrador steamer.

By telegraph with the most important places in the island and with all parts of the world.

The United States is represented by a consul.

Supplies.—The city is abundantly supplied with excellent water from Windsor Lake, 4 miles distant, and pipes are placed on the wharves for the supply of shipping. Supplies of every kind may be readily obtained.

The population of the city in 1894 numbered 31,142.

Coal.—The amount of coal on hand is sufficient for almost any requirement. Cape Breton coal is kept in stock at from \$3.85 to \$4.20 per ton; Welsh coal at about \$6.00; American anthracite coal at about \$7.50; 10 cents extra per ton for trimming.

Vessels can haul alongside the coal hulk, or coal by means of lighters, or go alongside a wharf at which there is a depth of 24 feet.

Docks.—The graving dock at St. Johns is 558 feet on the blocks, 610 feet long over all, has 84½ feet width of entrance, and 24 feet water over the sill at ordinary spring tides. A vessel of 3,175 tons has been docked.

This dock can be pumped out in 2½ hours. It has bilge blocks which are worked by a chain from the top of the dock, thereby giving extra support to a vessel before the dock is dry.

The floating dock, 133½ feet over all, and with 49 feet breadth of entrance, is capable of taking small vessels of 300 tons, and has 11½ feet over the blocks when sunk.

The north wharf of the graving dock is a fairly substantial wooden wharf, about 200 feet long, with 22 feet at low water, spring tides; the workshops of the Dock Company are situated at the inner end of the pier. Charges for sailing vessels, not over 50 tons register, \$12.00; from 50 to 75, \$18.00; 75 to 100, \$24.00; 100 tons and upward, 25 cents per ton. Steamers pay as above on gross tonnage.

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Patent Slip.—There is a patent slip, 100 feet in length over all, for small craft and boats.

Water.—Fresh water is laid onto the pier.

Port Dues.—Vessels under 60 tons, free; over 60 tons and not more than 100 tons, \$2.00; 100 to 200 tons, \$3.00; 200 to 300 tons, \$4.00; 300 to 400 tons, \$5.00; more than 400 tons, \$6.00. Light dues, 24 cents per registered ton, not to exceed \$115.00, payable once a year. Entrance fee, \$2.50; clearance fee, \$2.50. Health dues, \$2.00; bill of health, \$2.50; doctor's visit, \$2.00. Vessels in ballast calling for orders or in distress are not liable to dues.

Towage.—Tugs are available and of sufficient size and power for all requirements, charges varying from \$4.00, for vessels under 60 tons, to \$20.00 for 250 tons, and \$50.00 for 1,000 tons. Special rates during the ice season.

Pilots and tugs can be obtained upon making the signal to the blockhouse on Signal Hill, or to Cape Spear Lighthouse. The pilots go off in whaleboats.

Pilotage.—Pilotage is compulsory in and out; but one rate is charged. Vessels under 80 tons, \$5.35; 100 tons, \$7.35; 200 tons, \$9.35; 300 tons, \$13.35; 400 tons, \$18.70; 500 tons, \$21.35; 600 tons, \$24.00; 700 to 800 tons, \$26.70; over 800 tons, \$1.35 for every additional 100 tons. Pilotage for sailing vessel can not exceed \$32.00, and \$40.00 for a steamer.

Repairs.—The Dock Company can undertake extensive repairs to iron ships and machinery, to undergo which vessels not requiring to be docked may lie alongside their deep-water piers. Vessels' bottoms can be cleaned and coated with antifouling compositions; they also have a diver with all necessary appliances.

The Terra Nova Company have a crane which will lift 40 tons.

Hospitals.—There is a large hospital at St. Johns available for seamen, a hospital for infectious diseases, situated on Signal Hill, and a sailors' home.

Signals.—The International Commercial Code of Signals is in use at Signal Hill Blockhouse.

Time Signal.—A gun is fired every day at noon, St. Johns mean time, equivalent to 3h. 30m. 43.1s. Greenwich mean time, but is reported to be quite unreliable for the purpose of rating chronometers. The signal is made from near the blockhouse on Signal Hill, 517 feet above the sea.

Trade.—The chief business of St. Johns is the exportation of codfish and refining seal oil, and there is a large ropewalk.

Lights.—At Fort Amherst, from a square stone tower, 39 feet in height, and painted white, a fixed white light is shown, at an elevation of 134 feet, that should be visible from seaward, between

the bearings of S. 36° W. (S. 65° W. mag.) and N. 9° W. (N. 20° E. mag.), 12 miles.

Two fixed red lights are exhibited—the higher, near the corner of a chapel, from a small octagonal-shaped tower, 29 feet in height and painted white, at an elevation of 174 feet; and the lower, 20 feet above the roof of the customhouse, a red brick building 76 feet above high water, with its base painted white. These lights are 342 yards distant from each other, and when in line, bearing N. 84° W. (N. 55° W. mag.), lead through the Narrows, but over Merlin Rock, at the inner part of the entrance.

Fog Signal.—When Cape Spear or St. Johns Harbor is obscured by fog, a gun is fired every hour during daylight, and two guns in answer to a vessel's gun, from Fort Amherst. Between the intervals of firing the gun a horn will be sounded in reply to a vessel's horn or whistle.

Day marks.—Day marks have been placed on each of the two leading light structures. The marks on each structure are painted white, are heart-shaped, and three in number, forming a semicircle.

Dangers.—Vestal Rock, having 12 feet water on it, lies about N. 83° E. (S. 68° E. mag.) from Fort Amherst, and 100 yards from shore. To clear it, passing to the north, keep the leading marks on.

Pancake Rock, on the south shore, and about $\frac{1}{4}$ mile within South Head, is awash at high water, and from it a spur, with 12 feet water, extends about 40 yards to the northeastward.

Prosser Rock, with 5 feet water over it, lies 50 yards N. 4° E. (N. 33° E. mag.) from the fishing stage at Cahil Point, and is cleared when the leading marks are on.

Wash-balls Rocks are awash, and skirt the shore about 150 yards NE. of North Head; shoal water extends about 100 yards SE. of them.

White Rock, with 7 feet water on it, lies 40 yards from the cliff under Signal Hill, and 400 yards west of North Head.

Chain Rock is nearly covered at high tides, and lies 40 yards S. 7° E. (S. 22° W. mag.) of Chain Rock Battery. Ruby Rock, with 3 fathoms water over it, lies 40 yards S. 38° W. (S. 67° W. mag.) from Chain Rock.

To clear Seal Rock, which covers at three-quarters flood and lies N. 53° W. (N. 24° W. mag.) of Chain Rock Battery, keep South Head well open of Chain Rock Battery, bearing S. 64° E. (S. 35° E. mag.).

Merlin Rock, with 27 feet water on it, lies 150 yards S. 68° W. (N. 83° W. mag.) from Chain Rock. For a vessel of deep draft it is customary to buoy this rock with a boat when possible. The leading lights or marks in line lead almost over this rock.

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Buoy.—A buoy, painted black, lies in 12½ fathoms water a little more than 200 yards south of Galway packet wharf. This buoy is intended to assist the mail steam packets in hauling off from the wharf, and vessels should moor well clear of it.

Directions.—St. Johns Harbor is well distinguished by Fort Amherst, and by the flagstaff, blockhouse, and barracks, on Signal Hill, on the north side of entrance. But the entrance itself is so narrow that in foggy or hazy weather, when the hills are indistinct, a stranger must be careful not to be misled by the opening into Quiddy Viddy Harbor, which is about one mile northward.

At a distance the coast appears hilly, bleak, and desolate; the land rises abruptly from the sea to the height of 500 and 740 feet.

The narrow entrance to St. Johns Harbor, being only 330 yards wide, with high land on either side, does not appear from a distance; but after recognizing Cape Spear, as the land is approached, by steering so as to pass about 2 miles north of that cape, the blockhouse on Signal Hill will soon be visible.

Then steer for Signal Hill and bring the white day marks on bearing N. 84° W. (N. 55° W. mag.). This mark leads over Merlin Rock.

The Roman Catholic cathedral should always be open north of the land forming the south side of the entrance to the harbor, bearing N. 82° W. (N. 53° W. mag.), to avoid Vestal Rock. If the leading marks can not be seen in the day, steer so as to keep Chain Rock a little on the starboard bow, until abreast of Pancake Rock, when steer for the Customhouse N. 83° W. (N. 54° W. mag.), bearing in mind that South Head should be kept open of Frederick Battery Point, bearing S. 72° E. (S. 43° E. mag.), to clear Prosser Rock.

Small vessels, with boats to tow, often beat in, but the unsteadiness of the wind renders it tedious and difficult.

At Night bring the two leading red lights in line bearing N. 84° W. (N. 55° W. mag.), and proceed on this course through the Narrows into the harbor to any convenient anchorage, remembering, in a deep draft vessel, that the lights in line lead over Merlin Rock.

Anchorage.—A vessel encountering foul or baffling winds will find temporary anchorage in 15 fathoms, rock, just within the heads, where she may be taken in tow by a tug.

Ice.—St. Johns Harbor is rarely frozen over in winter, and is seldom closed for seven days during ordinary seasons, but in the years 1875 and 1882 access was very difficult for several weeks. The harbor ice disappears about the end of March. The prevalence of easterly winds, in early spring, drives heavy field ice upon the coast, and at times (even as late as August) icebergs drift into

the Narrows so as to render the passage of the entrance difficult. The field ice arrives from January to the middle of February, and is generally from 6 to 18 inches in thickness; it leaves about April or May. Vessels come and go all the year round.

Wintering.—H. M. S. *Tourmaline*, wintering at St. Johns, 1894-95, found the north wharf, belonging to the Dock Company, most convenient, the ship lying alongside the north side of the wharf, in a depth of 22 feet at low water, spring tides, out of the way of traffic and vessels using the dock, and sheltered from all winds, with scarcely any swell, even during strong east winds.

Fogs are less frequent at St. Johns than farther south, owing to the interposition of land to the SW., by which it is dissipated, and it is stated that although fog may prevail in the offing, it is frequently clear inside Cape Spear.

Tides.—It is high water, full and change, in St. Johns Harbor at 7h. 30m.; springs rise $3\frac{1}{4}$ feet, neaps rise $3\frac{1}{4}$ feet. There is very little tidal stream in the Narrows.

(B. A. Chart No. 2902.)

Freshwater Bay.—The south side hills extend to the southward from the entrance of St. Johns Harbor, the coast line being very steep and inaccessible until Freshwater Bay is reached. This bay, open to the northward, is $\frac{1}{2}$ mile deep and about $\frac{1}{2}$ mile wide; at the head there are a few houses and a shingly beach, inside which latter is a large pond, about 10 feet above the level of the sea, and reported to have a depth of 7 fathoms.

Anchorage may be obtained in the center of the bay, in from 8 to 12 fathoms water, over mud covered with sand, and very good holding ground. Small craft, which have missed St. Johns Harbor, have been known to ride out a NE. gale here, although exposed to nearly its full force.

Spriggs Point (Small Point) is a very sharp point with the land gradually rising and having cliffs on its east and west sides. On the east side there are some small islets, from 4 to 9 feet above high water.

Peggys Bag, on the west side of Deadmans Bay, has a large pinnacle, separated from the cliff, which may be easily distinguished, and Deadmans Bay, small and of no use, has a shingle beach at the head. Flats Point, east of Deadmans Bay, shows a square face of cliff to seaward, at the base of which a flat ledge extends into the sea.

Blackhead Bay, which may be recognized by the church at its head, is used by fishermen; it shoals gradually, and has a small pier where boats can land. Cape Spear Bay may be used as a temporary anchorage, in from 10 to 11 fathoms water, by vessels waiting to enter St. Johns Harbor.

Beacon.—A cairn, 417 feet above the sea, erected by the fishermen on Black Head, one mile NW. of Cape Spear, has been found of much use when making the coast in foggy weather. Black Head is a bold headland, sloping down gradually on each side, to Black Head and Spear Bays; it has six caves in it, the largest one being in the center.

Light.—Cape Spear, $3\frac{1}{4}$ miles SE. of the entrance to St. Johns Harbor, is 200 feet high, rises steeply from the sea, and is distinguished by a lighthouse, consisting of a lantern on a square white house, 38 feet in height, the roof of which is painted red and white in horizontal stripes; it exhibits, at an elevation of 264 feet, a revolving white light, attaining its greatest brilliancy every minute, which should be visible 32 miles.

Fog Signal.—A fog horn is situated about 600 yards north from Cape Spear Lighthouse, but in consequence of it being seldom heard by vessels coming from the southward, an additional fog horn is placed SSE., distant 150 yards from it. During thick or foggy weather both horns will be sounded simultaneously, giving blasts of eight seconds duration, separated by silent intervals of fifty-two seconds. (See page 474.)

Dangers.—Old Harry, with 3 fathoms water on it, lies $\frac{1}{2}$ mile N. 43° E. (N. 72° E. mag.) from Cape Spear.

Old Haman Rock, with a depth of $4\frac{1}{2}$ fathoms, lies $\frac{1}{2}$ mile N. 38° W. (N. 9° W. mag.) from Old Harry Rock.

A rock, small in extent, with a depth of 4 fathoms (probably less), lies nearly midway between Cape Spear and Old Harry Rock.

Tinker Rock, with a depth of 5 fathoms (less water reported), lies with Cape Spear Lighthouse bearing N. 81° W. (N. 52° W. mag.), distant $\frac{1}{2}$ mile.

Tinker Hill, on Motion Head, in line with North Head of Motion Bay, bearing S. 24° W. (S. 53° W. mag.), leads east of the dangers off Cape Spear, and Cliff Point in line with Black Head, bearing S. 82° W. (N. 69° W. mag.), leads north of these dangers.

North Head.—Between Cape Spear and North Head the coast is moderately low, the highest hill, 323 feet, being nearly midway; there is a small stone cairn on this hill. North Head, 193 feet high, is a rugged headland, and has a jagged appearance; at its base there is a rock about 15 feet high, nearly isolated from the land, which, standing out from the head, is conspicuous when seen from seaward.

Cow and Calf Ledge.—At about one mile south of Cape Spear, Cow and Calf Ledge, on which the depth is 9 fathoms, extends about 600 yards from the shore. North Ledge, with 11 fathoms, and White Rock, with 7 fathoms water over them, lie 1,400 and 450 yards SE. and south, respectively, from North Head.

Coast.—From North Head to Maddox Cove the coast is generally low, and faced by jagged rocks, which extend into the sea and prevent landing, except at Stoppers Side, where there is a small beach, but when landing here boats must be hauled up immediately. Three Peak Hill, 540 feet high, is on the north side of Maddox Cove.

Maddox Cove.—Good anchorage may be obtained in Maddox Cove, off the entrance to Petty Harbor. There are several houses, painted white, and a small pier at the head of the cove, where boats can land.

Coast.—From Maddox Cove the land again rises, and, with the exception of the entrance to Petty Harbor, continues high for $1\frac{1}{2}$ miles, where there is a cave or gulch in the shape of a horse-shoe, after which it is low, with a little cliff, until Seal Cove is reached.

Motion Head, 71 feet high, with Tinker Hill, about 180 feet high, close behind it, has several large bowlders scattered about the land in the vicinity, and a little to the southward of it there is a conspicuous rock on the coast line, which stands out well when seen from the northeastward. Motion Rocks, 14 feet high, and over which the sea is always breaking, lie 150 yards off Motion Head, and shoal water extends for a long $\frac{1}{2}$ mile from the head in a N.E. direction.

Here the general appearance of the coast is rugged and barren, the chief hills standing out well. Watch Hill, 713 feet high, and about $1\frac{1}{2}$ miles westward of Motion Head, is conical and has a beacon and a large bowlder on its summit.

Bow and Arrow Ledges, consisting of several pinnacle rocks, with depths of from 3 to 5 fathoms over them, and deeper water between, extend about $\frac{1}{2}$ mile from Motion Head; here, in heavy weather, the sea breaks in 10 fathoms water. Fishing boats are generally anchored on the edge of the shoals and along the 20-fathom line.

Depths Off Shore.—The soundings are generally regular until within the 30-fathom line, when the bottom becomes uneven.

Cordelia Deeps, extending from abreast North Head to the northward, may be found useful in making St. Johns Harbor during thick or foggy weather. They are wedge-shaped, being about $1\frac{1}{2}$ miles wide off North Head, gradually widening to $3\frac{1}{2}$ miles abreast Sugarloaf Head and 5 miles off Torbay Point, where soundings of 100 fathoms are obtained on the inshore side of the deeps; they there widen out to the deep water off Conception Bay.

The Riband, a narrow bank about $1\frac{1}{2}$ miles in length and with depths of from 26 to 30 fathoms, lies about $\frac{1}{2}$ mile off shore,

between Sugarloaf Head and Small Point. St. Georges Leads, lying about $\frac{1}{4}$ mile east of the entrance to St. Johns Harbor, has from 24 to 30 fathoms water on it, and a pinnacle rock at its northern extremity, on which the depth is 15 fathoms, dropping straight down to 25 fathoms.

Directions.—Making St. Johns Harbor in thick or foggy weather, it is recommended to shape a course for a position 10 miles S. 84° E. (S. 55° E. mag.) of Sugarloaf Head, from which, with the sounding machine going continuously, to endeavor to strike the Cordelia Deeps; but if soundings are not obtained in the Deeps, the water should not be shoaled to less than 70 fathoms, and the vessel worked slowly to the northward, off shore and again inshore to that depth, until the fog signal is heard or the Deeps struck.

(H. O. Chart No. 1102.)

Bull Head, 115 feet high, is $8\frac{1}{2}$ miles SSW. from Motion Head. The coast between is of slate cliffs, and the land behind rises to the height of 700 feet; it is bold-to, and free from offlying dangers. At 4 miles to the northeastward of Bull Head is The Spout, a remarkable natural phenomenon, caused by the rush of waves into an under-water cavern, from which a fissure in the rock allows its escape in jets of foam. It is most remarkable at high water, and when there is much swell. It makes a roaring noise, and may be seen distinctly 3 miles from the land.

Bay Bulls, extending $2\frac{1}{2}$ miles in a westerly direction, is one mile wide at the entrance and exposed to the sea, but a slight change in its direction above Pepper Alley Point adds to the protection of the anchorage, and the holding ground is good, being of sand and mud. The best anchorage is off the mouth of a little brook on the north side, in 10 fathoms water, but after heavy gales from the eastward a ground swell enters the harbor, although not sufficient to endanger shipping.

The inhabitants are principally engaged in the fisheries, and the ground is cultivated to some extent.

Communication.—When St. Johns Harbor is beset with ice this bay is often clear, and vessels may anchor here and communicate with St. Johns by land, a distance of 18 miles, the mail road being in excellent order.

Water.—Water can be procured in abundance from the river at the head of the bay.

Dangers.—A rock lies 80 yards south of Breadcheese Point, on the north shore of the bay, about $1\frac{1}{2}$ miles within Bull Head.

Maggotty Rock lies 120 yards from the shore, off a gravel beach on the south side, $1\frac{1}{4}$ miles from the entrance.

Directions.—Jonclay Hill, 810 feet high, on the north side of the harbor, being the highest hill on the coast, will help to guide the stranger to Bay Bulls. With a fair wind the course in is about N. 74° W. (N. 46° W. mag.), keeping the north shore aboard after passing the rock off Breadcheese Point and anchoring when convenient, the north side of the harbor being always the better sheltered from the ground swell.

Witless Bay, where there is a village and a large church, is 2 miles south of Bay Bulls, and too exposed to be recommended as an anchorage, but if used for temporary purposes, the best berth is in 8 fathoms water, over sand, $\frac{1}{4}$ mile above Bearcove Point, from which a ledge of rocks, partly dry, extends $\frac{1}{4}$ mile to the SSW.

Gull Island, rocky and wooded, lies off the mouth of Witless Bay. It is 240 feet high, and steep-to, but too small to afford any shelter. Both this island and South Head of Bay Bulls have red cliffs.

Green Island lies $\frac{1}{4}$ mile SE. of Witless Point. It is flat and faced with cliff 140 feet high. In the direction of Witless Point there are some dry slate ledges, and 100 yards southeastward of it is Man-of-war Rock, with 6 feet water on it.

Mobile Bay, SW. of Witless Point, is $1\frac{1}{4}$ miles deep, but affords no good anchorage.

Shoal water extends $\frac{1}{4}$ mile from Witless Point, but there is a fair channel between it and Green Island, with 5 fathoms water, sand and rock. In running through this passage keep in mid-channel, with South Head of Bay Bulls just shut in with Gull Island, bearing N. 30° E. (N. 48° E. mag.).

Toad Cove, the next fishing station south of Mobile Bay, is protected by Fox, Spear, and Pebble Islands. Fishing craft anchor here, but it is too exposed to be safe except in the fine weather of summer.

Fox Rock, with 4 fathoms water on it, lies $\frac{1}{4}$ mile N. 16° E. (N. 44° E. mag.) from the south point of Fox Island. The other islands are steep-to.

Great Island lies 3 miles SSW. from Green Island. It is $\frac{1}{4}$ mile in length and $\frac{1}{4}$ mile in breadth, 300 feet high, and may be distinguished from the neighboring islands by having three hills. None of these islands is inhabited. Vessels may pass in safety on either side of Great, Spear, or Pebble Islands.

Cape Neddick, 260 feet high, is a bluff headland $2\frac{1}{4}$ miles SW. from Great Island.

Offer Rock, with 6 fathoms water on it, lies $1\frac{1}{4}$ miles S. 15° E. (S. 13° W. mag.) from the cape, and should be avoided in heavy gales.

Brigus-by-South is a boat harbor, a mile NW. of Brigus Head. There is a church on its north side, visible from seaward.

(H. O. Chart No. 618.)

Cape Broyle, showing a front to the eastward $1\frac{1}{2}$ miles in length, is a remarkable wooded headland rising abruptly from the sea 553 feet high, and forms the south head of Broyle Harbor.

Old Harry Rock, with 12 feet water on it, lies $\frac{1}{2}$ mile S. 78° E. (S. 50° E. mag.) from the North Point of Cape Broyle, and is cleared by keeping Ferryland church open of Stone Islands, bearing S. 45° W. (S. 73° W. mag.).

Horse Rocks, with 5 fathoms on them, lie $\frac{1}{2}$ mile N. 72° E. (S. 80° E. mag.), nearly, from the north extreme of the cape.

Broyle Harbor runs in W. by N. 4 miles between Brigus Head on the north and Cape Broyle on the south. It is $1\frac{1}{2}$ miles wide at the entrance, but is exposed to the sea to afford safe anchorage in any weather. The usual anchorage is in Admirals Cove, in 11 fathoms, mud; but above Carrier Point there is anchorage in 7 fathoms, mud, more sheltered.

A church stands on the north side near the head of the harbor. The land is fertile, and cows, sheep, and goats are kept by the inhabitants. Water can be obtained at the waterfall in Spout Cove.

Saturday Ledge, with 6 feet water on it, lies $\frac{1}{2}$ mile above Admirals Head. To avoid it, keep Brigus Head well open of Admirals Head, bearing N. 78° E. (S. 74° E. mag.).

Harbor Rock, with 12 feet on it, lies about $\frac{1}{2}$ mile above Carrier Point, and above where vessels usually anchor.

Tides.—It is high water in Broyle Harbor, full and change, at 7h. 20m.; springs rises $5\frac{1}{2}$ feet, neaps rise $3\frac{1}{2}$ feet.

Caplin Bay, on the south side of Cape Broyle, runs in WNW. 2 miles. It is clear of danger, the holding ground is good, but it is open to the sea, like the other bays along this coast. The entrance on either side of Goose Island is nearly $\frac{1}{2}$ mile wide. Goose Island is 70 feet high, steep-to, except on the NW. side, where 50 yards off are two rocks that cover and uncover.

Stone Islands, under the south extreme of Cape Broyle, are steep-to on the south.

The shoal ground, extending from Coldeast Point, westward of Goose Island, is cleared by keeping Hares Ears open of Bois Island, bearing S. 28° E. (South mag.).

Ferryland Harbor, $1\frac{1}{2}$ miles south of Cape Broyle, is small but easy of access. The holding ground is good, and the anchorage is secure except in strong easterly gales, when much swell enters the

harbor at high water, between the rocky islets extending from Bois Island to Coldeast Point, which forms its north side.

Ferryland Head is 125 feet high, and joined to the mainland by a narrow isthmus, which forms the south side of the harbor. The entrance between Bois Island and Ferryland Head is only 200 yards broad, but inside the harbor widens to 400 yards. The best anchorage is in 10 fathoms, sand and mud, on the line joining Coldeast Point and Pool Beach, between two churches at the head of the harbor.

Light.—On Ferryland Head a cylindrical tower, 46 feet in height and painted red, exhibits a fixed white light, at an elevation of 200 feet, which should be visible 16 miles. The keeper's dwelling is painted white, with a red roof.

Communication.—The Coastal Steamship Company's steamers from St. Johns call here fortnightly during summer and autumn.

Water.—Water is scarce in Ferryland, but can be obtained from Caplin Bay.

Directions.—There being no dangers, except near the shore, on either side, from off Ferryland Head, bring the south church at the head of the harbor in the center of the passage between Ferryland Head and Bois Island, bearing N. 85° W. (N. 57° W. mag.), and run in upon this bearing, and after passing the Narrows steer a little northward, to avoid the shoal water off Pool Beach.

Ice.—Ferryland Harbor freezes at intervals, generally during the first ten days of February, but sometimes only for one day, but never if strong NW. winds are blowing. Winds between SW. and SSE. break up the ice and clear the harbor. Drift ice sometimes remains as late as 20th June. NE. winds fill the harbor with drift ice, which is cleared out directly there is a shift of wind to SW. From a mean of twenty years' observations, northern ice arrives about 23d February and leaves about 6th April. The harbors of Bay Bulls, Cape Broyle, Aquafort, Fermeuse, and Renewse fill with ice and clear at about the same dates as Ferryland.

Tides.—It is high water, full and change, in Ferryland Harbor at 7h. 20m.; springs rise 5½ feet, neaps rise 3½ feet.

Hares Ears, 50 feet high and steep-to, are two remarkably shaped slate rocks, separated from Ferryland Head by a narrow boat channel. Burnshead Rock, with 15 feet water on it, lies 600 yards S. 64° W. (N. 88° W. mag.) from the south extreme of Hares Ears.

Between Ferryland Head and the entrance to Aquafort Harbor is Crow Island, 70 feet high, and 200 yards ESE. of it is Crow Rock, nearly dry at low water.

Aquafort Harbor, 2 miles WSW. from Hares Ears, is a little more than 400 yards wide at the entrance, and runs in west 2½

miles between high steep hills. The anchorage is good, and vessels may lie in perfect safety in 9 fathoms, mud, abreast of the small and outer chapel on the north side. The water is generally smooth, and but little sea swell finds its way up the harbor, except during heavy easterly gales.

Spurwink Island, 40 feet high, at the south side of entrance, is bold-to; so also are the rocks off the North Head. Except a small rock lying 120 yards from the north shore, abreast of the Roman Catholic chapel, there are no dangers in the harbor. Above the beach at the harbor head there is a small deep pool, useful for careening and where fishing craft winter. The land is fertile and well wooded; salmon and trout abound in the two rivers which run into it; water can be obtained easily.

Aquafort Rocks.—At 400 yards north from Bald Head are Aquafort Rocks, awash at high spring tides; and at 400 yards about SSW. from the same head are Clearcove Rocks, also awash at high water.

Fermeuse Harbor.—At about $3\frac{1}{4}$ miles SSW. from Ferryland Head is Fermeuse Harbor. It is 400 yards wide at the entrance and runs in WNW. $2\frac{1}{4}$ miles. This harbor is a favorite fishing station, and is more frequented than Aquafort, being less land-locked and the anchorage more convenient.

Anchorage.—The principal settlement is in Admirals Cove, on the north side. Fishing vessels generally anchor in this cove on account of its being close to the open sea, but there is more roomy anchorage in Kingman Cove, one mile farther in on the south shore; but the safest anchorage is above Sheep Head, in 6 fathoms water, over mud.

Dangers.—Mad Rock, with 4 feet water on it, lies 100 yards from the south side of the entrance, and is cleared by keeping Blow-me-down Head, on the south shore of the harbor, open of Traces Point, bearing N. 74° W. (N. 46° W. mag.).

Bar Shoal is of rock, with 9 feet water on it, and lies 450 yards east of Sheep Head, at the head of the harbor.

Water can be obtained at various places on either shore.

Rocks.—At about a mile southward of Southern Head of Fermeuse Harbor, off Bearcove Point, is a rock, 200 yards from the shore, with 3 fathoms water on it; and nearly $\frac{1}{2}$ mile N. 40° E. (N. 68° E. mag.) from Sculpin Point, on the north side of entrance to Renewse Harbor, is Sunker Rock, with 4 feet on it.

Renewse Harbor runs in 2 miles NW. from Renewse Head, the south point of entrance; it is exposed to the sea and offers very indifferent anchorage, even to small vessels. Nevertheless, its convenient position with regard to the fishing ground renders it a resort during the summer season. It has many dangerous rocks,

which should be carefully avoided, and in bad weather the whole harbor is a mass of breakers. The village, with its church, is on the NE. side and about a mile from Renewse Head, but is not seen from seaward.

The best anchorage is off the village, in 4 fathoms water, 300 yards WNW. of Anchor Rock. Above this the water becomes shoal and the bottom strewn with bowlders, leaving only a narrow channel, with 3 feet water, to a small pool near the head of the harbor, where fishing craft careen and winter.

Dangers.—**Kettlebottom Rock**, with 6 feet water on it, lies at the entrance of the harbor, about $\frac{1}{4}$ mile S. by E. of Northern Head. Sculpin Shoal, with 3 fathoms water on it, lies E. by S. from Northern Head, and about 350 yards from the nearest shore. Whaleback Rock, awash at low water, lies about 200 yards south from Northern Head. In mid-channel, $\frac{1}{4}$ mile within the entrance, is Stag Rock, 9 feet high, and White Horse Shoal, with 6 feet water over it, lies 300 yards WNW. from Stag Rock. Black Horse, with 12 feet, lies just NW. of White Horse.

Shoal.—A shoal, with a depth of 12 feet over it, lies nearly 200 yards SSW. from Anchor Rock, and nearly in the middle of the apparent channel to the anchorage.

Rock.—There is also a rock, with 5 fathoms water, 400 yards SE. by E. from Shag Rock.

Directions.—Renewse Head rises from slate cliffs in two wooded hummocks to the height of 200 feet, and is steep-to. Open the harbor and run in about N. 74° W. (N. 46° W. mag.), so as to pass about 200 yards from Renewse Head; then keep along the SW. shore until past Shag and Anchor Rocks and White Horse Shoal, and anchor in 4 fathoms, sand. Water can be obtained from a brook in the village.

(H. O. Chart No. 1102.)

Bantam Banks.—At about 4 miles from the coast, between Fermeuse Harbor and Burnt Point, SW. of Renewse Harbor, are Bantam Fishing Banks; they extend about 5 miles NNE. and SSW., and are not more than $\frac{1}{4}$ mile wide, having irregular soundings from 9 to 30 fathoms water over rock. The northern bank, called Fermeuse Bantam, lies $2\frac{1}{4}$ miles S. 74° E. (S. 46° E. mag.) from Bearcove Point, and about $1\frac{1}{4}$ miles from the southern banks.

Caution.—With the above exceptions, all along the coast from St. Johns Harbor to Cape Ballard the soundings are deep, so that 90 fathoms are found at 6 miles from the land, and often 30 fathoms within $\frac{1}{4}$ mile of the rocks. On this account the lead is not a sure guide. Nevertheless, in approaching the land in a fog, speed should be frequently slackened and soundings taken, which, if

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During SW. and light SE. winds, often when near the coast, especially under the lee of a point, a vessel will suddenly emerge from the fog and every feature of the land will be distinctly visible.

Coast.—The coast from Renewse Head to Cape Ballard trends S. by W. $7\frac{1}{2}$ miles, is comparatively low, and can be approached to a moderate distance. The hills retreat from the shore and rise 700 feet high.

Renewse Islet.—A low rock, called Renewse Islet, lies about $\frac{1}{2}$ mile south of Renewse Head, and separated from the land by a narrow boat channel.

Renewse Rocks lie about 2 miles S. 15° E. (S. 13° W. mag.) from Renewse Head and $1\frac{1}{2}$ miles from the shore. They are always from 6 to 10 feet above water, and a rock, with 6 feet water on it, lies 100 yards E. by S. of them. In bad weather the sea breaks over them heavily. Vessels may go between them and the shore in fine weather, but in heavy weather it is not safe to do so. Cape Race Lighthouse open south of Cape Ballard, bearing S. 34° W. (S. 62° W. mag.), leads about a mile east of Renewse Rocks.

Cape Ballard rises abruptly from the sea 290 feet high, with a bare round summit. It is the more remarkable because on each side of the cape the land falls, and even in fogs the fishermen recognize this cape by the fog hanging black and dense round its sides. The water is deep close to it.

Chance Cove Head, about 2 miles SW. by S. from Cape Ballard, is of dark slate cliffs, 150 feet high.

Black Rocks, 15 feet above high water, lie a mile southwestward of the head, and in front of Chance Cove.

Chance Cove is exposed to the sea, and has a gravel beach at its head. During NE. winds coasting vessels anchor here, in 4 fathoms, sand. On the NW. side of the cove there is a small fishing settlement. Their boats and fishing stages are protected by a shoal of sand and stones, upon which the sea breaks.

Frenchman Cove, SW. of Chance Cove, is rocky.

Clam Cove, nearly 4 miles N. by E. of Cape Race, is the outlet of a shallow stream. In ordinary weather boats can land here safely. Between this cove and Cape Race the coast is cliffy and broken, with here and there a small cove where a boat might land in favorable weather.

Cape Race is the southeastern extremity of Newfoundland. It is $9\frac{1}{2}$ miles SW. by S. from Cape Ballard, and is distinguished by a lighthouse standing close to the keeper's dwelling, with a beacon in front. At its extremity there is a detached wedge-shaped rock, 40 feet high.

The land about the cape appears low and flat, in comparison with Cape Ballard or Cape Pine, but cliffs of slate, from 100 to 200 feet high, face the sea there in nearly vertical strata. The land rises gradually, and in clear weather there will be seen between 10 and 12 miles to the NE. a rocky range known as the Red Hills, rising 710 feet high.

Cape Race is bare of trees, and has a brown, desolate, and barren appearance; but in sheltered hollows and along the courses of the rivulets there is a stunted growth of spruce, fir, and alder. The rocks are of the Silurian system, and are thinly covered with peat and bog.

Boats may land in moderate weather in coves east and west of the lighthouse, but the ordinary landing is in Cape Cove, about $\frac{1}{4}$ mile NE.

Light.—The lighthouse on Cape Race is 40 feet high, circular, the SE. face painted red and white in broad vertical stripes, and shows, at the height of 180 feet above the sea, a revolving white light, attaining its greatest brilliancy every half minute, and visible from seaward in clear weather, between the bearings of N. 38° E. (N. 66° E. mag.) and S. 38° W. (S. 66° W. mag.), 19 miles.

Beacon.—A conical beacon stands 50 yards S. 31° E. (S. 3° E. mag.) from the lighthouse.

Fog Signal.—In thick or foggy weather a whistle, about 83 yards SE. by S. of the lighthouse, will sound blasts of ten seconds duration at intervals of fifty seconds. It has been heard from a distance of 7 miles.

Signal and Ice-reporting Station.—Cape Race is connected by telegraph with St. Johns, to which place vessels passing are reported. It is also an ice-reporting station. Information as to ice, wind, temperature, and weather indications can be obtained during the months of April and May by communicating with the signal station. A Lloyds station also here.

Tides.—It is high water, full and change, at Cape Race at 7h.; springs rise $6\frac{1}{2}$ feet, neaps rise 5 feet.

Caution.—Currents.—As fogs are exceedingly prevalent along the South coast of Newfoundland, especially during the months of June and July, it is necessary that the ordinary set of currents and dangerous indraught into the deep bays should be known and guarded against.

Soundings.—When in the vicinity of Capes Race and Pine, care should be taken to obtain frequent casts of the lead; the soundings will be found regular and of moderate depth, and, in addition to these precautions, the chart should be referred to.

Ice.—It should be remembered that icebergs may be met with off this coast at nearly all seasons. In March, April, May, June, and

sometimes July, field ice is often encountered, either on the banks or nearer to Newfoundland.

From twenty years' observations the earliest arrival of northern ice recorded at Cape Race is 17th January, and the latest 12th April, the average date being about the first week in February. The departure of ice varies from 25th February to 7th June, the average time being about the middle of April.

Ballard Bank lies parallel to the coast about 7 miles eastward of Cape Race. It is $13\frac{1}{2}$ miles in length, with a greatest breadth of $4\frac{1}{2}$ miles.

During heavy winter gales the sea breaks on the NE. portion of this bank, and probably also on the whole of the 7 and 8 fathom patches near the cape.

Garrett Rock, with 8 fathoms water over it, the least depth known on Ballard Bank, is small, and lies a little more than 9 miles N. 82° E. (S. 70° E. mag.) from Cape Race Lighthouse.

Tommy Rock lies at the north extreme of Ballard Bank. It is small in extent, and has a depth of 9 fathoms over it.

CHAPTER X.

COAST OF LABRADOR—CAPE ST. LEWIS TO GRAND POINT AND THE STRAIT OF BELLE ISLE.

Fishing Grounds.—New fishing grounds, with depths from about 100 fathoms to about 200 fathoms, were discovered in 1895 to the eastward and northeastward of Newfoundland. They have been fished on during the past three years by Gloucester fishermen.

Approximately these limits are between 48° and 55° north latitude and 49° and 56° west longitude. (*See Fisherman's Supplement to H. O. Chart No. 1412.*)

(H. O. Charts Nos. 809 and 924.)

The Coast of Labrador from Cape St. Lewis (in latitude 52° 21' 15" N., longitude 55° 38' 30" W.) to York Point, a distance of nearly 30 miles in a SW. direction, is composed of bare granitic hills, which, excepting in the vicinity of Chateau Bay, do not exceed the height of 700 feet above the level of the sea, but appear much higher, because they usually rise abruptly from that level. Several of the bays and inlets are large, with bold shores and very deep water. Neither the islands nor the dangers of this coast are so numerous as to render navigation intricate or difficult; but the frequent fogs, the heavy easterly swell rolled in from the Atlantic, and the icebergs, which are almost always drifting along with the current from the northward, all contribute in making the condition of the coast hazardous to vessels.

Fisheries.—There are only a few permanent inhabitants, but cod fishing is carried on extensively by the inhabitants of Newfoundland, who bring their families for the season, and have huts and fishing stages at almost every bay, cove, and harbor. The principal fishing stations are at Battle and St. Charles Harbors. The fishing is carried on in small brigs and schooners, generally of from 30 to 100 tons, and in boats. The vessels return to Newfoundland, and only a very few persons are left, who winter up the bays of the mainland, to hunt for furs and to be ready for the seal fishing at the breaking up of the ice in spring. The boats are hauled up on the rocks, or taken into coves of the mainland, where they are covered over with spruce branches and are thus secured for the winter.

The Climate on this coast is extremely severe, the mean temperature of the year being below the freezing point. At Chateau Bay,

about the last of July the earliest plants are just springing up, and grass only just beginning to give a shade of green in sheltered spots between the hills. The temperature of the sea outside the bay at this time is about 32°, and the air 43° Fahrenheit in the warmest period of the day. The fishermen, however, report that it is much more cold about Chateau Bay and the north side of the Atlantic entrance of the Strait of Belle Isle than farther to the northward, and also that fogs are of more frequent occurrence. It would seem that this low temperature is common to the entrance of narrow straits, for not only is the surface of the sea colder here than elsewhere in the neighborhood, but also at Mingan, Point de Monts, and Bic, on the St. Lawrence River; and the low temperature of the air obviously depends upon that of the sea, for on proceeding only a very few miles up the bays the increase of temperature is immediately perceived.

(B. A. Chart No. 183.)

Cape St. Lewis is of precipitous and dark-red granitic hills, about 500 feet high. At its southeastern extremity there is a small rocky peninsula; and nearly a mile NE. of this lies St. Lewis Rock, small, low, black, and close to the shore, with deep water at a distance of 400 yards.

The highest land over Cape St. Lewis has two summits, and falls abruptly to Fox Harbor and is partly wooded.

St. Lewis Sound, open to the eastward, is more than 4 miles wide at the entrance, between Cape St. Lewis and Great Island; this island is SSE. from the south extremity of the cape. The sound, from its entrance to Mary Harbor Head at the entrance of St. Lewis Inlet, is 8 miles deep in a west direction. Its northern shores are formed by the mainland, and the southern by Battle, Great Caribou, and several other islands, for about 5 miles in, after which the mainland is on both sides.

A very heavy sea occasionally rolls from the eastward into St. Lewis Sound, even as far up as the entrance of the inlet, round the islands, and up the bays of the mainland to the westward of them, often coming in without wind and breaking with fury over islets 30 feet high. The roar of the surf in a calm night can be compared to nothing less than the falls of Niagara. This high and long rolling sea is, however, far less dangerous to boats and impedes them less than the short breaking sea of the Gulf of St. Lawrence. It is an annoyance by preventing landing, but in other respects is of use by discovering shoals, for during its continuance there is no danger with less than 4 fathoms which has not a breaker upon it. Boats should, however, be on their guard on such occasions, for on some of these shoals the sea does not break

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constantly, but only occasionally, when it breaks in a sheet of foam, which would swamp any boat that might be over the spot at the time.

Tides.—It is high water, full and change, in St. Lewis Sound at 6h. 40m; springs rise $3\frac{1}{2}$ feet, neaps rise one foot.

Fox Harbor, $1\frac{1}{2}$ miles westward of the south extremity of Cape St. Lewis, is a cove of the mainland, running in nearly a mile to NE., and forming quite a secure anchorage in from 5 to 8 fathoms, over mud bottom. The entrance of this harbor is only about 200 yards wide, with a depth of 3 fathoms, but the harbor is more than twice as wide within. The east entrance point is low, with several houses of the fishermen upon it, and there is a small rock above water close off it to the northwestward, and joined to it by shoal water.

A large bank, with a least depth of $5\frac{1}{2}$ fathoms water, lies southwestward of the entrance to Fox Harbor, from which it is $\frac{1}{2}$ mile distant.

Water may be had in Fox Harbor from streamlets and ponds, but wood is very scarce.

Directions.—No other directions for Fox Harbor are necessary than for a vessel to sail in to the northwestward, close past the point on which the houses stand, and then, leaving an unsheltered bay running to the north on the port hand, haul round the rock above water to the eastward into the harbor. In order to pass in the deepest water the rock should not be left more than 100 yards on the starboard hand, for there is a reef, partly above water, off the south extreme of the point, which separates the harbor from the unsheltered bay to the westward of it, and forms the west side of the entrance. The best berth to anchor in is about 600 yards within the entrance.

Port Marnham is formed by Marnham Island, which is narrow, of considerable height, and about $1\frac{1}{2}$ miles long. The eastern entrance, between the east end of this island and the main, is narrow and only fit for boats. The principal entrance, which is 5 miles W. $\frac{1}{2}$ N. of Cape St. Lewis, is between the west extreme of the island and Deer Point, 800 yards wide, with a depth of from 19 to 31 fathoms in the middle and bold to the rocks on either side. The harbor to the northward of the island is of the same breadth, extensive enough for a large number of vessels, and quite landlocked. The best anchorage is off a small creek on the north shore, in 9 fathoms, mud; but shelter will be found anywhere in 13 to 18 fathoms, mud. The water runs shoal off Danger Point, the middle of the north side of the harbor, for 300 yards.

Shoal.—A shoal, with 13 feet water on it, lies $\frac{1}{2}$ mile SSE. of the boat channel into Port Marnham and 300 yards off shore.

Water may be obtained from small streams of water or ponds of rain water in various parts near the shores; and there are a few small trees up the NW. cove, but firewood is scarce.

Long Harbor is immediately to the south of the entrance of Port Marnham; Deer Point, which is the west point of entrance of the latter, being also the north point of entrance of the former. Bay Point, the south point of entrance of Long Harbor, of green feldspar, is $1\frac{1}{2}$ miles SE. $\frac{1}{2}$ S. from Deer Point, and having off it, at the distance of $\frac{1}{2}$ mile, Shag Rocks, 6 feet high. The harbor runs in $4\frac{1}{2}$ miles W. $\frac{1}{2}$ N., and is about $\frac{1}{2}$ mile wide, with deep water. There is good anchorage near its head, but it is completely open to wind and sea from the east, and is not a safe place for vessels.

River Islands are a group lying at the entrance of St. Lewis Inlet, and consist of Captain Jack Island, Duck Island, and Anthony Isles. The former and westernmost is separated from Mary Harbor Head by a deep and clear channel 800 yards wide, and from Duck Island to the eastward by an unnavigable channel of the same breadth, but full of rocks above water. Both these islands are of bare granite, 150 feet in height, and they are each about 3 miles in circumference. Around and off the NE. end of Duck Island there are several small and bare islets, the two easternmost of which are Anthony Isles. A chain of rocks, the shoalest of which has a depth of 2 feet water on it, extends $\frac{1}{2}$ mile southeastward of the NE. extreme of Duck Island, and a shoal with $3\frac{1}{2}$ fathoms water over it lies 800 yards farther in the same direction, from which the western of Anthony Islands is 1,200 yards N. 4° E. (N. 39° E. mag.). To the westward of River Islands, and between them and the main, it is possible to anchor, but the depth of water is great, exceeding 30 fathoms, over mud bottom, except when close to the islands, and, as considerable swell often rolls in, the riding is insecure.

Banks.—Several banks, among which are those known as Eskimo, Northern, and Monday Banks, with Blake Ground, lie in the entrance to St. Lewis Sound, having over them depths of from 10 to 17 fathoms water. Those with 14 fathoms water and less are reported to break in winter gales.

St. Lewis Inlet is nearly a mile wide at the entrance and becomes wider within. There are bays with several small islands in them on the south side of the inlet, but no good anchorage, on account of the great depth of water and exposure to easterly winds, until as far in as Black Fly Island, which is the first in the center of the inlet, 9 miles from the entrance. The depth of water often exceeds 30 fathoms in the center of the inlet and is nearly 20 fathoms close to the shores on either side. The bottom is everywhere of mud, and there are no dangers in the way excepting a small rocky shoal

2 miles below Black Fly Island, which, being always above water, will readily be seen, and must be left on the port hand in running up the inlet.

Black Fly Island is about $\frac{1}{4}$ mile long, partially wooded, and surrounded with bowlders, which extend from it 600 yards down the inlet, and also from the north point of the island across to the main, so as to leave only one navigable channel, which is to the southwestward of the island. There is good anchorage under the west side of this island, in from 5 to 9 fathoms, over a bottom of mud and stones; and wood and water may be had in abundance.

The navigation becomes intricate immediately above this island, but it is, nevertheless, possible to take a vessel not drawing over 18 feet $\frac{1}{2}$ miles farther up, where the navigation for vessels is terminated by a flat of sand and bowlders, nearly dry at low water, and extending across the inlet off the mouth of St. Lewis River. A mile below Black Fly Island the inlet is only $\frac{1}{4}$ mile wide, and it contracts again to the same breadth immediately above the island. Farther up it expands to more than a mile wide, and in this wide space, $1\frac{1}{4}$ miles above Black Fly Island, lies Wood Island, which is nearly a mile long and 600 yards broad. This island is also surrounded with bowlders, leaving a very narrow channel with 2 fathoms water between it and the mainland to the south, but the channel northward of the island is rather wider, and has from 3 to 14 fathoms water in it. This island is thickly wooded, and so are the shores on either side, with spruce and birch, which supply timber large enough for building schooners and boats; water is abundant.

The trees increase in number and size from the entrance to the head of the inlet, where the climate is quite different from what it is on the coast, where the sea is often at the freezing point, and the temperature of the air is not much higher at times, even in the warmest summer months. At the head of the inlet the weather is sometimes inconveniently warm, with westerly winds, and mosquitoes and black flies innumerable. The fishermen from Newfoundland obtain the wood necessary for fishing stages, etc., from this inlet, and sometimes build boats there. The scenery is beautiful, the granitic hills rising occasionally, on either side of the inlet, to the height of 700 or 800 feet above the sea. There are high clay cliffs at the mouth of St. Lewis River, at the head of the inlet. There is not water enough for boats over the flats of sand and bowlders at the entrance of this river, and it has not, in consequence, been examined. The water, however, is still quite salt off its mouth, so that it is probably, as fishermen report, but a small stream. There was a great salmon fishery carried on here several years ago, but it is said to have completely failed.

Battle Islands form the south point of St. Lewis Sound. Double Island, 130 feet high, is the easternmost land on this point of the coast, and lies about one mile to the southeastward of the rest of Battle Islands, showing as the extreme both from the SW and NE. Great Island, 158 feet high, will be readily known, not only from being the northernmost of these islands, but also from its high and black precipitous rocks, with horizontal white streaks seaward and a large white patch on the west side, rendering it unlike any of the others. It is nearly round, about $\frac{1}{4}$ mile in diameter, and surmounted by a flagstaff.

The eastern shores of Battle Islands are fronted with shoals, but the whole may be cleared by keeping the NE. extreme of Double Island open east of Gull Island, bearing S. 33° E. (S. 2° W. mag.) until Caribou Point is open north of Great Island, S. 68° W. (N. 77° W. mag.).

North and South Ribb are two ridges of rocks, each about 400 yards in diameter, on which the sea always breaks. They are about $\frac{1}{4}$ mile apart in a NNW. and SSE. direction from each other. The southern reef lies $\frac{1}{4}$ mile N. 17° E. (N. 52° E. mag.) from Gull Island.

Strangers should not attempt to run between these reefs and Battle Islands on their passage to and from St. Lewis Sound, but should pass eastward of the reefs.

Middle Ribb, a shoal with 14 feet water on it, lies midway between North and South Ribbs.

Battle Harbor, between Battle Islands and the NE. extreme of Great Caribou Island, is only suitable for small vessels, being about 60 yards wide in the entrance, about 150 yards wide within, about $\frac{1}{4}$ mile long, and with from 4 to 6 fathoms water in it, over mud bottom. It is generally crowded with the vessels and boats of fishermen, which moor to the rocks on either side, and the shores are covered with their houses and fishing stages. There is a good house and store on Battle Island, with a high flagstaff, which can be readily seen from seaward. This place is much frequented, and has a church with a small spire.

The southern entrance is only suitable for boats. Vessels must therefore approach this harbor from the northward, passing westward of Great Island, and the other islands lying between it and Battle Island, which will be distinguished by the high flagstaff already mentioned.

When proceeding southward, close past Great Island, two small and round islets, about 100 yards in diameter, will be seen, the southernmost of them being in the entrance of the harbor. They are S. 35° E. (South mag.) from the west side of Great Island, at distances of about $\frac{1}{4}$ and $\frac{1}{2}$ mile, respectively, are the only dangers

in the way when entering, and, being quite bold, may be closely passed on either side. Just to the westward of Battle Harbor, in Great Caribou Island, there are two coves, with huts and fishing stages, but these should not be mistaken for those in Battle Harbor, after the description which has been given.

Battle Harbor is reported to be secure during the summer months; but in autumn a heavy ground swell, termed the "undertow" by fishermen, is said to roll in between the islands, causing damage to vessels and fishing stages and rendering the harbor unsafe.

Communication.—A steamer of the Newfoundland Coastal Steamship Company runs between St. Johns and Battle Harbor fortnightly during summer and autumn, and connects with the Labrador steamer to Nain.

Coal.—A small quantity of coal (about 20 tons) may be obtained.

Hospital.—There is a good hospital at Battle Harbor.

Caution.—During the herring season great caution should be used by steamers to avoid fouling their screws in the nets.

Ice.—From the mean of seven years' observations (omitting the year 1878, when the harbor was frozen unusually late and open unusually early), Battle Harbor is generally frozen about 13th December and open 16th May. The mean epoch of the arrival of northern ice is 31st December, and drift ice appears during February or March, the coast being clear about the middle of April, except in an abnormal season, when it has remained as late as 6th June.

Great Caribou Island forms the east side of Caribou Channel, leading to Assizes Harbor. Black Head, the western extreme, falls steeply to the sea from an elevation of 200 feet, and slopes gradually on the north side to a marsh, a few feet above high water, which extends from Sand Cove on the west to Cartridge Bight on the east side.

A shoal bank extends from the north side of Black Head, across Sand Cove, to a distance 300 yards from the shore, with depths over it of less than 3 fathoms; and a rock, with 2 feet water over it, on the southern part, at 200 yards from the nearest shore.

There is a narrow channel, with a depth of $3\frac{1}{2}$ fathoms in it, between this bank and the ledge off Little Caribou Island, but no marks could be found to lead through it.

A rock, with 15 feet water over it, lies 300 yards northwestward of this bank, and $\frac{1}{4}$ mile S. 11° E. (S. 24° W. mag.) from the south extreme of Indian Island. A small shoal, with a depth of $4\frac{1}{2}$ fathoms, lies 265 yards south from the same extreme.

Indian Island, joined at low water to the middle of the west side of Great Caribou Island by a bank of gravel, connecting it

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Indian Cove, the shallow channel between Indian Island and Great Caribou Island, affords good shelter for fishing craft as far south as the first narrows, beyond which only small boats can proceed. Numerous houses and fishing stages line this cove.

Mouse Island, a small white rock, 14 feet high, ¼ mile northward of Indian Island, is separated from Great Caribou Island by a narrow channel with 9 feet water in it. A rock, with 6 feet water over it, lies close to the NW. extreme of Mouse Island.

Caribou Point, the NW. extreme of Great Caribou Island, rises to a circular mound, 130 feet above high water. The north extreme of the point may be recognized by the striped appearance, caused by an alternation of black and white terraces of rock in vertical stratification.

Assizes Island forms the western side of the northern entrance to Caribou Channel and the NW. shore of Assizes Harbor. Near the center is a hill 280 feet high, generally flat at the summit, with a few small elevations, falling steeply to Nimrod Tickle on the NW. and Assizes Harbor on the east side. It is partly covered with turf and small wood, and the underlying rock, when visible, is white in color.

The Rags, a cluster of rocks, the highest of which is 8 feet above high water, lie close to the north extreme of Assizes Island, but have no danger beyond a short distance from them.

The east shore of Assizes Island is indented by deep fissures, and fringed by a bank, the northern portion of which, having 7½ fathoms water over it, is known as Parsons Ground.

A bank, with 9 fathoms water over it, lies 1,300 yards N. 79° E. (S. 66° E. mag.) from The Rags and 870 yards from the nearest part of Assizes Island.

The small bay southward of Assizes Island, and between it and Hare Island, has less depths than heretofore charted, there being 2 and 3 fathoms water where 6 to 10 fathoms are shown. It is also stated by local fishermen that the space between Dumpling Island and the mainland has likewise shoaled.

Copper Island forms the NE. side of Assizes Harbor, and is wedge-shaped, the summit, 137 feet high, being near the NW. extreme. The north side is steep and in some parts cliffy. Near the SE. extreme of the western shore there is a small green sward. A small islet 15 feet high lies close to the SE. extreme of Copper Island, and a rock about 5 feet high joins the south extreme of this islet.

Hare Island has a flat-topped hill 192 feet high near the NW. extreme, and a peaked hill 155 feet high near the east extreme, and

is separated from Assizes Island by a channel 65 yards wide, which is encumbered with rocks and should not be used.

On the west side of Hare Island there is a rock with less than 6 feet water over it, and there is a shoal, on which the depth is $4\frac{1}{2}$ fathoms, about 200 yards westward of the rock. The whole space between Hare and Assizes Islands, being encumbered with foul ground, should not be entered.

Assizes Rock, with 4 feet water on it, is the shoalest part of a bank, 335 yards in a north and south direction and nearly 200 yards wide, situated 200 yards westward of the west extreme of Indian Island. The eastern summit of Tilcey Island (near the east extreme) in line with the east extreme of Little Caribou Island, bearing about S. 35° E. (South mag.), leads SW., and Cape St. Lewis open east of Caribou Point, bearing N. 12° E. (N. 47° E. mag.), leads west of this rock and nearly over Mid Rock.

A shoal, with $4\frac{1}{2}$ fathoms water over it, lies 150 yards westward of the NW. extreme of Indian Island.

Mid Rock, with 8 feet water on it, is 400 yards N. 13° W. (N. 22° E. mag.) from the NW. extreme of Indian Island. Little Caribou Island entirely open west of Indian Island, bearing S. 25° E. (S. 10° W. mag.), leads west, and the SE. summit of Hare Island in line with the east extreme of the islet SE. of Copper Island, S. 34° W. (S. 69° W. mag.), leads NW. of this rock.

Assizes Harbor, comprised between Assizes, Copper, and Hare Islands, is entered from the northward between Assizes and Copper Islands, and from the southeastward between Copper and Hare Islands. The harbor trends WNW. for 700 yards between the latter islands, with a breadth of 450 yards, and then turns sharply to the westward for 650 yards, between Assizes and Hare Islands, where it is 400 yards wide at the eastern part. There are a few houses on a promontory about 20 feet high at the head of the harbor.

The entrance to the harbor is encumbered with shoals, and these have been further increased by ballast thrown overboard from vessels at anchor in the western part. Those off the north coast of Hare Island have depths over them of from 10 to 15 feet water, and are nearly 200 yards from the shore. The north extreme of Indian Island in line with the south extreme of the islet southeastward of Copper Island, bearing S. 84° E. (S. 49° E. mag.), leads north, and the NW. extreme of Copper Island shut in with the ESE. extreme of the high-water line of Assizes Island, bearing N. 20° E. (N. 55° E. mag.), leads west of these shoals.

The shores of the harbor are free from danger beyond the distance of 70 yards, with the exception of the shoals above described and a small spit of rock extending from the east extreme of Assizes

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Island. This spit extends into the channel between Assizes and Copper Islands, but falls quickly to deep water.

Shoals extend to the eastward 300 yards from the east and NE. shore of Hare Island, with depths of from 10 to 18 feet water over them, and others fringe the SE. and south shores of that island for a distance of 150 yards. The east extreme of Tilcey Island, just open east of the east extreme of Little Caribou Island, bearing S. 37° E. (S. 2° E. mag.), leads close east, and the sharp peak at the west end of the range in the center of Great Caribou Island, open north of Indian Island, N. 77° E. (S. 68° E. mag.), leads north of these shoals.

Water may be obtained, generally, from a small stream running into the head of the creek on the west side of the harbor.

Little Caribou Island, 129 feet high, pyramidal in shape, and partially covered with turf over whitish rock, with stunted wood in the hollows, is separated from the SE. shore of Hare Island by a channel 300 yards wide, which is narrowed to 135 yards by the shoal water off Hare Island and a fringe which surrounds Little Caribou Island.

A dangerous ledge, situated 150 yards eastward of Little Caribou Island, is 335 yards long, 150 yards wide, and has 2 feet over it at low water. The clear channel, between this ledge and Little Caribou Island, is only 65 yards wide, with a depth of $4\frac{1}{2}$ fathoms water. No natural marks could be found for leading through this channel, but by rounding the east extreme of Little Caribou Island at a distance of more than 30 yards all danger on that side will be avoided.

In ordinary weather the shoal water surrounding the ledge may be readily seen, showing over a white bottom, while the shoalest parts are covered with kelp, and the channel to the westward appears of a dark color.

A small shoal, with $3\frac{1}{2}$ fathoms water over it, lies 550 yards N. 19° W. (N. 16° E. mag.) from the east extreme of Little Caribou Island.

Directions.—Approaching Assizes Harbor from the northward, Caribou Point should be rounded and Copper Island steered for till Little Caribou Island is entirely open west of Indian Island, bearing S. 25° E. (S. 10° W. mag.), when Copper Island may be rounded at 200 yards, the harbor entered, and anchorage obtained in from $6\frac{1}{2}$ to 9 fathoms water. By taking care to keep Indian Island north extreme just shut in with the south extreme of Copper Island, bearing S. 84° E. (S. 49° E. mag.), until the north extreme of Copper Island is shut in with the south extreme of Assizes Island, bearing N. 20° E. (N. 55° E. mag.), anchorage will be reached in the western part of the harbor.

To proceed through Caribou Channel to the southward, after passing Copper Island, Cape St. Lewis must not be shut in with Caribou Point before the east extreme of Little Caribou Island is in line with a point, midway between the eastern summit of Tilcey Island and the south extreme of that island, bearing S. 35° E. (South mag.). This mark will lead midway between Assizes Rock and the shoal water off Hare Island. When Little Caribou Island is neared, round it at 60 yards distant, till St. Charles Gull Island is open south of Great Caribou Island, bearing S. 53° E. (S. 18° E. mag.), when all danger will be passed.

If approaching from the southward, the southern shore of Little Caribou Island should be steered for, keeping St. Charles Gull Island open south of Black Head, bearing S. 53° E. (S. 18° E. mag.); round the east point of Little Caribou Island at a distance of 60 yards, steering for the green sward on Copper Island. Bring the point midway between the eastern summit and east extreme of Tilcey Island in line with the east extreme of Little Caribou Island, bearing S. 35° E. (South mag.), to lead between Assizes Rock and the shoal water off Hare Island. Run on this mark till the sharp peak at the west end of the range in the center of Great Caribou Island is open north of Indian Island, bearing N. 77° E. (S. 68° E. mag.), when the harbor may be entered as before directed.

If wishing to proceed to the northward through Caribou Channel, when Cape St. Lewis is open west of Caribou Point, bearing N. 12° E. (N. 47° E. mag.), the south extreme of Copper Island may be passed at the distance of 200 yards; keep Little Caribou Island open west of Indian Island, bearing S. 25° E. (S. 10° W. mag.), until the southeastern summit of Hare Island is over the south extreme of Copper Island, bearing S. 33° W. (S. 68° W. mag.), when Mid Rock will be cleared.

There is a passage between Little Caribou and Hare Islands by keeping one-third of the distance from the former.

Water may be obtained from ponds at the head of Sand Cove, but if firewood is required, boats must be sent up St. Charles River.

Tides.—It is high water, full and change, in Assizes Harbor at 7h. 5m.; springs rise 4½ feet, neaps rise 3½ feet.

St. Charles River.—Nimrod Tickle, between Assizes Island and the mainland to the westward, leads into St. Charles River. Nimrod Tickle, 465 yards wide in the narrowest part, is free from danger, except some rocks, which will be seen on the south side, extending nearly 200 yards from the shore, both at the north and west points of Assizes Island. The mainland side should, therefore, be taken and a good lookout kept for the channel, which has not been very carefully examined. The mouth of this river, named The Lodge, affords roomy and landlocked anchorage.

About 2 miles from its mouth the channel becomes narrow and intricate, though navigable for vessels for $1\frac{1}{2}$ miles farther, above which point there is a depth of 6 feet water only, in a narrow channel with many rocks. Wood and water are abundant.

Gull Rocks are two small islets, 25 feet high, in the middle of the entrance to St. Lewis Sound.

Two banks lie in a NW. direction from the western of Gull Rocks, the southern, with 5 fathoms water over it, being $\frac{1}{2}$ mile, and the northern, with $6\frac{1}{2}$ fathoms water over it, $\frac{3}{4}$ mile distant.

Green Island, 51 feet high, and covered with grass, lies $1\frac{1}{2}$ miles east of Club Cape. A reef extends 400 yards northward of the island.

A shoal, with $4\frac{1}{2}$ fathoms water on it, lies 200 yards NW., and Green Island Bank, a large bank with a depth of 7 fathoms over it, is situated 800 yards E. by N., respectively, from Green Island.

Middle Rocks lie close SE. of Green Island, and one mile NW. of Cape Caribou. They are almost connected to each other, and Green Island and the whole group should not be approached nearer than $\frac{1}{2}$ mile.

Club Cape, a high point, has a reef extending 140 yards northeastward. Kyer Cove Point is the turning point westward of the cape.

Kyer Cove, $1\frac{1}{2}$ miles southwestward of Club Cape, is exposed to the northerly swells, and consequently is of no use to vessels.

Marley Rocks form a dangerous shoal off the entrance to Kyer Cove, occupying a space 600 yards long, with a depth of 6 feet water on them, and situated $1\frac{1}{2}$ miles west from Kyer Cove Point and $\frac{1}{2}$ mile from the east shore of Kyer Cove. Green Island entirely open north of Kyer Cove Point, bearing S. 86° E. (S. 51° E. mag.), leads north of these rocks.

A small rock, with 10 feet water on it, is 800 yards South (S. 35° W. mag.) from Marley Rocks and 550 yards from the east shore of Kyer Cove.

A small rock lies close to Lions Head, a projection on the east shore of Kyer Cove at one mile southwestward of Kyer Cove Point.

Shoal Harbor, another bay of the mainland, westward of Kyer Cove, is $1\frac{1}{2}$ miles deep, with two small islets and several rocks in it. There is a depth of 12 feet between these islets and the SE. side of the bay; it is therefore only suitable for small vessels. The entrance to this harbor is one mile SW. from the SW. end of Duck Island.

Mary Harbor, one mile deep, is $1\frac{1}{2}$ miles northwestward of Shoal Harbor, and on the south side of Mary Harbor Head. It is small, with 3 fathoms water, and only suitable for small vessels. Farther out in this bay there is more room and greater depth of

water, but the riding is rendered unsafe by the easterly swell which occasionally rolls in round the islands.

Tides.—It is high water, full and change, in Mary Harbor at 6h. 40m.; springs rise $3\frac{1}{2}$ feet.

Cape St. Charles will be readily known by St. Charles Hill, which is round, 654 feet above the sea, is nearly one mile west from the cape, and is the highest land on this part of the coast.

St. Charles Gull Island, 160 feet high and $\frac{1}{4}$ mile long, lies about one mile east of the cape. The island has several large rocks on its mainland side.

Fish Rock lies 1,200 yards SE. of St. Charles Island, and is bold of approach; a rock has been reported to lie one mile S. 8° E. (S. 27° W. mag.) from it. This rock has been unsuccessfully searched for.

A rock, awash at low water, is situated 150 yards southwestward of the SW. extreme of Fish Rock.

Western Bank, with 17 feet water on it, is a small rock, steep-to, lying 450 yards S. 46° W. (S. 81° W. mag.) from the south extreme of St. Charles Gull Island.

St. Charles Channel, between the mainland on the SW. and Great and Little Caribou, Hare and Assizes Islands on the NE., is from $\frac{1}{4}$ to $\frac{3}{4}$ mile wide. The course and distance up the center of this fine channel, from its entrance to the Narrows, between White Bear Point and Hare Island, is N. 75° W. (N. 40° W. mag.) $3\frac{1}{2}$ miles. Immediately outside the narrows, on the mainland side, is White Bear Bay, extending $1\frac{1}{4}$ miles west, and affording no shelter, being full of rocks. Just within the Narrows lies Dumpling Island, a small islet, with rocks and shoal water extending 250 yards from its SE. end. There is no channel for vessels between it and the mainland; but eastward of it, that is—between it and Hare Island—the channel is $\frac{1}{4}$ mile wide and has from 14 to 18 fathoms water in it.

A run of $\frac{1}{4}$ mile on a N. 35° W. (North mag.) course will lead through the Narrows, between Assizes Island and the mainland, the channel being 1,200 yards wide, with a depth of more than 20 fathoms in it, and free from all dangers, except those which extend 200 yards from the shore on either side. The course through this channel to the mouth of St. Charles River is N. 65° W. (N. 30° W. mag.) for $1\frac{1}{4}$ miles, and a vessel may either run up The Lodge to the southward, or, through Nimrod Tickle, northward, into St. Lewis Sound.

Anchorage.—Throughout all this extensive and landlocked space there is anchorage, but usually in depths exceeding 20 fathoms, over mud bottom.

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Antill Cove, SW. of Fox Island, is 600 yards deep, and free from danger beyond a short distance from the shore.

Anchorage.—Anchorage may be obtained in from 11 to 14 fathoms water, as convenient, near the head of this cove, with shelter from all winds except those from the northward.

Shoals.—Three shoals lie in a direct line N. 85° E. (S. 60° E. mag.) from Wall Island.

Inner Shoal, with 17 feet water on it, is 650 yards, Middle Shoal, with a depth of 4 fathoms, 1,250 yards, and Wall Shoal, with 9 fathoms water over it, 1,850 yards distant, respectively, from Wall Island.

The west extreme of Gull Island (Battle Islands) shut in with the south extreme of Black Islet, bearing N. 22° E. (N. 57° E. mag.), leads between Wall Island and Inner Shoal.

St. Charles Harbor is formed by three islands, which lie along the northeastern side of Cape St. Charles. The space in which vessels can anchor is about 1,200 yards long by about ¼ mile wide, and the depth of water from 5 to 12 fathoms, over mud bottom. Some swell rolls in with an easterly wind, on which account it is not considered a very secure harbor for large vessels, except in the finest months of summer. Small vessels might be made quite secure by making fast to the rocks between Wall Island and the mainland in 9 or 10 feet water. There are houses and fishing stages both on the islands and the main. Wall Island is the most southeastern island, and the southeastern entrance to the harbor, between it and the main, is so shallow and narrow as to be only fit for boats. Tilcey Island, the next NW., will be readily distinguished, being 232 feet high, black, and precipitous, unlike any other near. Between this island and Wall Island is the entrance to the harbor, 200 yards wide, and with deep water close to the shores on either side. The channel between Tilcey and Fox Island, which is the next NW. and the only remaining island, is 400 yards wide, only 2 or 3 fathoms water in it, and rendered intricate by rocks. The channel out of the harbor to the NW., between Fox Island and the main, is narrow, shallow, and only fit for boats.

Directions.—St. Charles harbor is easy of access, there being no danger in the channel. Run in from the north side of Wall Island, so as to pass its east extreme at about 300 yards, steering west (N. 55° W. mag.), which will lead through the entrance between Wall and Tilcey Islands into the harbor. Three small rocks above water will be seen close off the inner or west point of Wall Island, but they are quite bold, as are the shores on either side.

Anchorage.—The best anchorage is off the mouth of a small bay on the mainland, in which a wharf and flagstaff, at the principal fishing establishment, will be seen.

Water.—There are permanent residents in St. Charles Harbor, and water may be obtained from the mainland.

Several Banks, among which are Henney and Coles Banks, Saunders Knob, and Shoal Ground, lie southward of Cape St. Charles and in the entrance to Niger Sound, but none are dangerous.

Niger Sound extends 6 miles W. by N., with deep water, often exceeding 80 fathoms. The entrance is between Cape St. Charles and Camp Islands, and at $2\frac{1}{2}$ miles within is Big Duck Island, 340 feet high. Little Duck Island, much smaller, and 50 feet high, lies 600 yards southward of Big Duck Island.

Duck Island Bank, with $5\frac{1}{2}$ to 7 fathoms water on it, extends nearly $\frac{1}{2}$ mile NE. from Little Duck Island. Shoal water extends from both east and west extremes of that island, and a bar (the least depth on which is 4 fathoms) connects the west extreme with Big Duck Island.

Two shoals, with $4\frac{1}{2}$ and $4\frac{1}{2}$ fathoms water on them, respectively, lie in the channel NW. of Big Duck Island, leaving a narrow passage on each side in the western entrance to Islet Bay.

Anchorage.—Good anchorage will be found in Horn Bay, at the head of the sound; and also in Islet Bay, north of Big Duck Island. Wood and water may be procured in abundance.

Deer Island, nearly round, about 300 feet high and $\frac{1}{2}$ mile in diameter, lies close off the South Point of Niger Sound, so as to leave only a boat channel (named Chimney Tickle) between, where there are fishing huts and stages, as there are also in Carroll Cove, a small indentation of the mainland $\frac{1}{2}$ mile westward, where the anchorage is good, and frequented by many vessels during the fishing season.

Morgan Shoal extends nearly 200 yards from the point of the mainland west of Chimney Tickle.

Main Tickle, the channel between Camp and Deer Islands, is 400 yards wide, and free from danger; Main Tickle Bank, with 6 fathoms water over it, is in the middle of the northern entrance.

Camp Islands are several bare granitic islands, close together, having a small cove on their SW. side, where fishing schooners moor to the rocks, with very indifferent shelter from south winds. There is excellent shelter for the boats of the fishermen, whose huts and stages will be seen on the shores.

Romsey Rock, with 9 feet water on it, is 350 yards S. 77° W. (N. 68° W. mag.) from the SW. extreme of the middle island of Camp Islands. The west extreme of Big Duck Island, open westward of Camp Islands, bearing N. 50° W. (N. 15° W. mag.), leads SW. of this rock.

The Horns, a bank with 5 fathoms water over it, lies 950 yards S. 86° W. (S. 51° W. mag.) from the south extreme of Deer Island,

and Red Island Bank, on which the depth is 7 fathoms, is 1,200 yards N. 65° E. (S. 80° E. mag.) from Red Island.

(H. O. Chart No. 924.)

Table Head is 5 miles SSW. from the east extreme of the Camp Islands, is very remarkable, being an isolated mass of basaltic columns upon sandstone (flat at top, and precipitous all round), the summit of which is 200 feet above the sea. Truck Island, lying close to the NE. side of Table Head, affords no shelter, and White Mica Cove, one mile farther north, is only suitable for boats.

St. Peter Islands, a scattered cluster of small and low islets, are clifty and black, being for the most part composed of basalt and amygdaloid; they have many rocks above and under water between them. The easternmost of them have been named the Petrel Islands, on account of these birds breeding upon them. Shoal water does not extend beyond 400 yards seaward of any of these islands. The easternmost islet of the St. Peter group lies 1½ miles southward and the southernmost 3 miles S. 15° W. (S. 50° W. mag.) from Table Head.

Allen Shoal, of rock, has a depth of 6 fathoms over it and breaks in bad weather. It lies 1½ miles N. 80° W. (N. 45° W. mag.) of Petrel Island.

St. Peter Bay, within these islets, and on the SW. side of Table Head, is completely open to the SE., but the islets and reefs form a breakwater from the sea. St. Peter Point, the south extreme, is 2 miles NW. from the southern St. Peter Island. The bay is 2 miles deep in a NW. by W. direction, and indifferent anchorage may be obtained, in case of necessity, ¼ mile from its head, in from 12 to 20 fathoms water, over sand, but there is not more than 6 or 7 fathoms water in the entrance between St. Peter Point and the innermost islet. This entrance is ¼ mile wide, but has a shoal, with 12 feet water on it, nearly 400 yards southwestward of the islet. There is also a reef 340 yards SE. of St. Peter Point.

The passage between these dangers is about 800 yards wide, and must be approached from the southward, passing westward of all the St. Peter Islands and giving them a berth of not less than ¼ mile. The hills at the head of the bay are nearly 900 feet high, and extend from in rear of St. Peter Point southwestward to Chateau Bay.

Water.—Both water and wood may be obtained here.

Sandwich Point.—Chateau Point, the south extreme of Castle Island, is 6½ miles S. 51° W. (S. 86° W. mag.) from the southernmost of St. Peter Islands. Nearly midway between them is Sandwich Point and Cove, the latter useful only to boats.

(B. A. Chart No. 1151.)

Bad Bay, rocky and dangerous, and affording no shelter to vessels, is situated between Sandwich Point and Seal Point, the NE. point of Chateau Bay.

Henney Bank, with a least depth of 7 fathoms over it, lies 750 yards south of Seal Island.

Castle Ledge, a small rocky patch with $2\frac{1}{2}$ fathoms water over it, lies 300 yards S. 13° E. (S. 22° W. mag.) of the NE. point of Castle Island.

Chateau Bay will be easily recognized from seaward by its position with reference to the remarkable Table Head and St. Peter Islands, by the high land in rear of it, and by the coast to the southwestward of it being straight and unbroken and free from islands, but more especially by the two wall-sided and flat-topped caps of basalt, which form the summits of Castle and Henley Islands, the former being 198 and the latter 196 feet above the sea.

This bay has within it Henley, Antelope, and Pitts Harbors, the two latter of which are quite secure and suitable for large vessels. The principal entrance to these harbors is westward of the southern point of Castle Island. There is a narrow channel, named American Tickle, used by vessels drawing less than 15 feet water, between Castle and Henley Islands, and another between Henley Island and the mainland, but they are only used by very small craft.

The scenery in Chateau Bay is bold. Pitts Hill, on the west side of Pitts Harbor, is 593 feet above the sea, and Beacon Hill, NW. of it, is 752 feet. From the latter the land falls rapidly to the northern shore of Temple Bay, a long and very deep arm of the sea, having at its head a river in which there are at times large numbers of salmon. On the SW. side of Temple Bay there is a remarkable hill, 832 feet high, which falls very steeply to the shore, and southward of it is a high ridge, High Beacon Hill, the summit of which is 978 feet above the sea.

York Point, the western side of the entrance to Chateau Bay, has some rocks off it, and should not be approached nearer than 600 yards.

Chateau Point, the eastern side of the entrance, is steep to on its western side, but southward there is a shoal extending 150 yards.

Ice.—Chateau Bay is generally frozen up about Christmas, being again open about the first week in July.

Henley Harbor, only suitable for small vessels, is frequented by fishermen, the majority of whom come from Newfoundland in June or July and remain until October. There are numerous stages erected along the shore on both sides of the harbor, which is formed by Stage and Henley Islands. It is about $\frac{1}{4}$ mile long

and 200 yards wide, with depths of from 4 to 12 fathoms. With strong winds from SW. there is a swell in this anchorage.

Antelope Harbor is on the east side of Chateau Bay, between Henley Island and Barrier Point, which, with its reef, separates it from Pitts Harbor to the westward. On Henley Island there are two or three houses occupied by fishermen, who reside in this locality all the year round, but during the depth of winter they go to live at the head of Pitts Harbor, where they get a higher temperature and more shelter from the wind.

Beacons.—Immediately eastward of Barrier Point there is a bay, on the east point of which, named Grenville Point, there is a wooden cask beacon, which serves as a leading mark for clearing the rocks westward of Castle Island. A beacon, consisting of a cask, painted black, and fixed against a square rock, which is whitewashed, stands nearly midway on the west side of Castle Island.

Pitts Harbor, the best anchorage in Chateau Bay, is roomy and well sheltered, about one mile long, and from $\frac{1}{2}$ to $\frac{3}{4}$ mile wide, and has in its central part from 14 to 17 fathoms water, over a bottom of mud.

Water.—Water may be procured from a stream at the head of this harbor, and wood is plentiful.

Temple Bay extends in a northwesterly direction for about 4 miles from its two entrances on either side of Whale Island. In the middle there are from 20 to 45 fathoms water, and the shores being steep-to, there is no good anchorage. At the head of the bay there is a flat of sand and bowlders fronting the entrance to the river before noticed, and in its southern corner, about 600 yards southwestward of Temple Pass, there is a fishing village, named Chateau, off which small vessels find anchorage.

Considerable quantities of mica are found on the SW. side of Temple Bay, and on the NE. side a small outcrop of graphite was noticed.

Temple Pass, the southern entrance to the bay, is only 180 yards wide; the bottom is rocky, with large bowlders, the least water being 3 fathoms. The ebb tide runs through this pass with considerable strength.

Milners Tickle, the northern entrance to Temple Bay, has 4 fathoms least water in it, but the shores on either side are foul for some distance off, and without a buoy the clear passage is not easily distinguished.

Communication.—The coasting steamers from St. Johns, Newfoundland, which call at Chateau Bay during the summer months, anchor (alternately) at Henley Harbor and the anchorage in Temple Bay.

Rocks.—Between York Point and Temple Pass there are two rocks, one, with $4\frac{1}{2}$ fathoms water over it, lying 600 yards north-eastward of the point, and Halfway Rock, on which the depth is $2\frac{1}{2}$ fathoms, rather more than midway between the point and Temple Pass, and 600 yards off shore.

Twelve-feet Rock, with 9 feet water over it, lies in the fairway of the entrance to the bay and between Castle and Whale Islands. A rocky patch, on which the depth is $3\frac{1}{2}$ fathoms, lies 265 yards north of Twelve-feet Rock.

Flat Island Rock, with $3\frac{1}{2}$ fathoms water over it, lies 335 yards from the eastern side of Flat Island. The beacon on Grenville Point just open of the west extreme of Henley Island, bearing about N. 10° E. (N. 45° E. mag.), leads between Twelve-feet and Flat Island Rocks.

Freezers Rock, with 9 feet water over it, lies between the west extreme of Henley Island and Whale Island; between it and the former there are depths of $4\frac{1}{2}$ and 5 fathoms.

Black Rock, 2 feet above high water, off Black Point, is steep-to, and makes a good mark for clearing Freezers Rock.

American Shoal, a rocky patch, with only one foot over it at low water, lies in the fairway to Henley Harbor, and is easily seen.

Directions.—From the southward, having made out Castle and Henley Islands, steer to give York Point a berth of $\frac{1}{2}$ mile and to bring the cask beacon on Grenville Point just open of Black Point, bearing N. 10° E. (N. 45° E. mag.). Should the beacon not be in position, Grenville Point itself may be distinguished by the black rock, of which it is composed, showing out against the lighter background of the land beyond. This mark will lead 265 yards west of Twelve-feet Rock and nearly the same distance eastward of Flat Island Rock, which latter will be passed when the north extreme of Castle Island Cap is well closed in on the south point of Stage Island, bearing East (S. 55° E. mag.).

If proceeding to Antelope Harbor, and being of not very heavy draft, steer to pass within 100 yards of Black Rock and anchor between Grenville Point and the north shore of Henley Island, where the harbor is 600 yards wide and the depths from 15 to 18 fathoms, over mud. Between this position and Grenville Point there is a small mud bank, having over it a least depth of 7 fathoms.

If proceeding to Pitts Harbor, the beacon on Castle Island in line with the rock (to be marked by an iron cage), 2 feet high, lying about 200 yards SW. of Stage Island, bearing S. 46° E. (S. 11° E. mag.), leads SW. of Freezers Rock and to the entrance to Pitts Harbor; in case the beacon should be down, the square white-washed rock may be used instead, taking care not to bring the south extreme of the basalt cap on Henley Island inside Black

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split off Barrier Point, and when the SW. extreme of Castle Island
is in line with the east point of Whale Island, S. 25° E. (S. 10° W.
mag.), steer into the harbor and anchor as convenient.

Tides.—It is high water full and change in Chateau Bay at 7h.
16m.; springs rise 4 feet, neaps rise $2\frac{1}{2}$ feet; neaps range $1\frac{1}{2}$ feet,
but in the autumn, with strong SW. winds, the spring range is
sometimes increased by 2 feet.

Tidal Streams.—Inside the bay, through the narrow channels,
and off York and Chateau Points, the tidal streams are perceptible,
but outside the current is almost always to the southward, and
during the survey, in the months of August and September, it was
noticeable that while the temperature of the water in Pitts Harbor
and Temple Bay averaged 45°, that outside the bay never rose
above 37°.

(H. O. Chart No 934.)

Belle Isle, lying about 14 miles SE. of Table Head, and directly
off the Atlantic entrance of Belle Isle Strait, is frequented by
American and English fishermen. It is about $9\frac{1}{4}$ miles long in a
NE. direction and 3 miles wide, including Lark Island, close to its
west side, and is composed of a range of hills, bare of trees, which
rise to the height of 680 feet above the sea. The hills are princi-
pally of granite, alternating with clay and slate, and their steep
sides dip into the sea in every part, except at the NE. extreme of
the island, where two low points converge so as to form a narrow
creek, named Black Joke Cove, which shelters very small fishing
vessels during the finest months of summer. Shelter may also be
obtained in Lark Harbor, under Lark Island, and in Valley Cove,
 $2\frac{1}{2}$ miles south of the islet; but none of these coves are considered
safe early in spring or late in autumn, because of the heavy swell
which rolls into them from the eastward.

The east side of Belle Isle affords no anchorage, and there is
hardly a creek where a boat might find shelter.

A small rocky bank, with 5 fathoms least water, is reported to
exist about 5 miles N. 30° W. (N. 5° E. mag.) from the NE. extreme
of Lark Island.

Lark Harbor.—The anchorage called Lark Harbor, between
Lark Island and Belle Isle, is only 400 yards wide, with deep water,
indifferent holding ground, and much exposed to northeasterly
winds, but as it possesses the advantage of two entrances, vessels
are allowed a speedy and safe passage to sea.

Black Joke Cove, at the NE. end of the island, is not more
than 150 feet wide, with 12 feet water. It is formed inside an islet
joined to the island at low water, and will only afford secure shelter

to one or two small vessels moored head and stern; but in heavy gales from the northeastward, especially at high-water springs, the breaking seas dash with violence over the ledge of rocks, and make it unsafe. The breakwater which was completed in the summer of 1858, being of insufficient weight and strength, the whole of the material was swept into the cove.

Valley Cove.—In Valley Cove vessels may find fair anchorage and shelter during easterly winds. The bottom is sand, and in the line of the points the soundings are 17 fathoms, decreasing gradually to the shore.

Rock.—A rock, upon which the sea breaks heavily, lies with the SW. extreme of Belle Isle bearing S. 31° E. (S. 4° W. mag.), distant $\frac{1}{2}$ mile, and is estimated to have about 9 feet of water over it. It is probably identical with the dangers reported in 1881 by the steamer *Ontario*.

Lights.—The lighthouse on the south point of Belle Isle, a circular tower, 59 feet in height and painted white, exhibits, at an elevation of 470 feet, and between the bearings S. 76° W. (N. 69° W. mag.), through North, to S. 70° E. (S. 35° E. mag.), a fixed white light, which is visible 28 miles.

On account of the elevation at which the light is exhibited, it has been found to be frequently obscured by fog, and in consequence an additional light is exhibited from a square lighthouse, painted white and 31 feet in height, situated below the old lighthouse.

This latter is a fixed white light, elevated 137 feet, and should be visible 17 miles in all directions, except where intercepted by the high land of Belle Isle.

The lights are shown from sunset to sunrise from the 1st of April to the 20th of December of each year.

Fog Signal.—During thick or foggy weather, an explosive bomb is fired from a point near the upper lighthouse, at an elevation of about 400 feet above the sea. The signal, which should explode high in the air, at a distance of 500 feet in a southerly direction, will be fired at intervals of twenty minutes.

Should the bomb signal fail, a gun will be fired at intervals of twenty minutes.

Vessels in the immediate vicinity of the signal may hear a dull report, caused by the charge that throws the signal into the air, preceding the loud report.

Provision Depot.—There is a depot of provisions for shipwrecked mariners at the lower lighthouse.

Northeast Ledge dries at low water, spring tides, and lies $1\frac{1}{2}$ miles N. 12° E. (N. 47° E. mag.) from the NE. point of Belle Isle, with a deep-water channel between.

Strait of Belle Isle.—The eastern entrance of the Strait of Belle Isle, between York Point and Cape Bauld, is 26 miles wide, the latter point bearing from the former S. 43° E. (S. 8° E. mag.), but the narrowest part of the strait is southward of Amour Point, in Forteau Bay, where it is only 9½ miles wide. The western entrance of the strait, between Greenly Island and Férolle Point, is nearly 21 miles wide, the point bearing from the island S. 11° E. (S. 23° W. mag.).

Steep granitic shores extend from York Point southwestward to Cape Diable, where sandstone lying on granite commences and continues to Grand Point, at the western entrance of the strait, occasionally forming magnificent cliffs several hundred feet in height.

Outer Soundings.—During summer and autumn the route from Great Britain to Quebec through the Strait of Belle Isle is much frequented by steamers, and the bank of soundings lying eastward, distant 28 miles from the north point of Belle Isle, affords a valuable means of ascertaining the position of a vessel in foggy weather when approaching from the eastward.

The least water yet found on this bank is 86 fathoms, mud, with 105 to 181 fathoms, sand, between it and the bank which stretches eastward from Belle Isle.

The Soundings in the Strait of Belle Isle are not so irregular but that they will afford assistance to a vessel at night, or during the fogs which so frequently prevail. The deepest water is on the Labrador side, as, for instance, from York Point to Red Bay, where, however, it is interrupted by the shallow water off Wreck Bay. It is also deep on that side from Pinware to Forteau Bays, inclusive; but the line of deep water is not direct nor continuous through the strait, and it is still more perplexing that there is as deep water within 2 miles of the dangerous Flower Ledges on the Newfoundland side, opposite Forteau Bay, as in any part of the strait. The depth of water varies in different parts from between 60 and 70 to 20 fathoms, and the nature of the bottom is as various as the depths, being sometimes of rock and at others of sand, broken shell, pieces of coral, or gravel.

Tides and Currents.—The flood and ebb streams at Cape Bauld continue running NW. and SE. inshore three hours after high and low water; and at 6 to 7 miles NE. of the cape they continue running five hours after high and low water by the shore.

At Cape Norman the inshore streams run two hours after high and low water by the shore, and in the center of the strait the stream runs four hours after high and low water.

Off Forteau and Sandy Bays the streams turn with the high and low water on shore, and turn quickly; in the center of the strait

the stream runs one hour later. These streams, however, are not constant.

The flood comes from the northward along the coast of Labrador and also from the SE., from Cape Bauld to Cape Norman. The latter stream, there is reason to believe, is often turned off to the northward by Cape Norman, and the same thing takes place at Green Island, on the Newfoundland side, toward Greenly Island on the opposite side of the strait. There is, moreover, at times a stream running from the SW. for several days together along the west coast of Newfoundland. This stream occasionally sets from Férolle Point obliquely across the strait toward Forteau Bay. Sometimes, and especially with NE. winds, the current runs directly in an opposite direction along the west coast of Newfoundland from Férolle Point past Rich Point.

Navigation of the Strait in Fogs.—The navigation of the Strait of Belle Isle is attended with great danger in dark or foggy nights, during which no vessel should attempt to run through. On such occasions, therefore, it would be prudent to anchor in one of the bays on the north side of the strait rather than to continue under way.

A sailing vessel bound into the Gulf of St. Lawrence, and running with an easterly wind, will, however, find no place fit for that purpose until arriving at the indifferent anchorage of Pinware Bay, for Red Bay can not be entered by a large vessel with an easterly wind.

Loup Bay is the first good anchorage under such circumstances, and there the vessel would be so far advanced in her passage through the strait that it would not be worth while to stop, since everything might be easily cleared in the remaining short distance. But with a SW. wind, at the approach of night and appearance of fog, a vessel bound out through the strait to the eastward had better stand off and on under easy sail, tacking by the deep-sea lead from the Newfoundland side till morning, if not farther to the northeastward than Férolle Point. If farther advanced it would be better to make Forteau Bay before dark and anchor there for the night. In light winds or calms, during dark nights or foggy weather, it is better to bring up with a stream anchor anywhere in the strait rather than to drive about with the tides without knowing whither, but then a lookout must be kept for drifting icebergs.

Fogs occur with all southerly and easterly winds, and they are frequent likewise with SW. winds; it is only when the wind is from between the north and west that clear weather can be safely reckoned upon.

Wreck Bay.—Southwestward for 10 miles from York Point, along the Labrador side of the Strait of Belle Isle, the coast is

straight and bold to Wreck Bay, which has a small river at its head and affords no shelter.

Bay Shoal, a small patch of rocky ground with 5 fathoms least water, lies S. 24° E. (S. 10° W. mag.) from the east point of Wreck Bay. The bottom can be plainly seen on this patch in fine weather. There is a heavy swell upon it in easterly gales, and frequently a great rippling; icebergs often ground upon it.

Barge Bay, 4½ miles southwestward of Wreck Bay, will be recognized by a waterfall at its head.

Black Bay, about 5 miles WSW. from Barge Bay, is about 2 miles wide at entrance, narrower within, and about 2 miles deep in a northwesterly direction. Small vessels occasionally anchor in it; but the ground is of sand, not very good for holding, and it is open to the wind and sea from the SE.

Gull Island lies about 1½ miles SW. from Wisemans Point, the west point of Black Bay. It is a small, low, and bare rock about ¼ mile off shore.

Thistle Rock, nearly awash at low water, lies about 1½ miles westward of Gull Island and about 1,200 yards S. 86° E. (S. 52° E. mag.) from Twin Island. When the water is smooth there is no sign of this danger and the clearing marks must be attended to.

(B. A. Chart No. 1186.)

Capstan Cove Point is the extreme of a bare gray mound, 52 feet high, about 1½ miles westward of Gull Island. It shelters Capstan Cove from easterly winds, which anchorage is much resorted to by fishermen in the herring season.

Twin Island consists of two hummocks, the northern 40 and the southern 32 feet high, joined together except at high water, spring tides. Several rocks extend westward from this island.

There is no passage for any vessel drawing more than 6 feet water between Twin Island and the mainland, nor between the east extreme of Saddle Island and the mainland. A bar, with 15 feet water on it, connects Twin and Saddle Islands.

Red Bay, a good, although small, harbor, formed by Saddle Island and a bay in the mainland, is divided into two parts; the northern named the basin and the southern the harbor. The passage between them is 200 yards wide, with a depth of 7 fathoms in the middle, between Penney Island and the eastern shore.

The eastern side of the harbor is surmounted by a series of hillocks, from 65 to 205 feet high, connected by marshes in which there are ponds. The hills at the head are densely wooded, and at 1½ miles northward is a hill, 545 feet high, with several conspicuous bowlders at the summit. From Moore Point, the west

entrance point to the basin, the hills fall steeply to the sea, occasionally in red granite cliffs, over which a small cascade falls in ordinary weather. Tracey Hill, immediately over the entrance, is 505 feet high and surmounted by a cairn with a pole on it.

The settlement, containing a population of about 150, is principally on the eastern shore, and is surmounted by a hillock with a flagstaff, behind which is the chapel, while a small church stands on the southern slope. The storehouse is on Penney Island. There are a few huts on Saddle Island and Moore Point, and at the head of the basin are the winter houses and a school with a flagstaff near it.

Shoal water extends 135 yards from the eastern shore and head of the basin, and a large shoal has been formed that extends 300 yards from the southern turning point to the deep bight on the western shore.

A bank of bowlders extends eastward from Moore Point, and there is no passage for anything but boats between that point and Penney Island.

Saddle Island is bare, and surmounted at the east extreme by Cox Hill, 97 feet high, and by a similar hill at the west extreme, but 101 feet high. The western extreme has deep water within a few yards, but off the north side shoal water extends 150 yards, and bowlders, that dry at low water, 100 yards from the middle of the north shore.

Scab Rock, with 16 feet water over it, lies 350 yards southward of the east end of Saddle Island.

Western Arm, the open bay extending westward from Red Bay, has no danger at any distance from the shore, except in the coves at the head, and affords good anchorage, with westerly winds, in 14 fathoms water or less, as convenient, the water decreasing gradually to the head, into which a large stream flows.

West Point is the eastern extreme of the peninsula, about 62 feet high, that forms the south shore of Western Arm.

Mad Moll, a rock which dries at low water, spring tides, lies 135 yards southward of West Point.

The Louse, with 22 feet water on it, and Belles Amours Shoal, with 5 fathoms water over it, are situated 800 yards S. 30° E. (S. 4° W. mag.) and 1 $\frac{1}{2}$ miles S. 5° E. (S. 29° W. mag.), respectively, from West Point.

Supplies.—Supplies of salt beef or flour may be procured in small quantities.

Water may be obtained, at high water, from the streams at the head of the basin or Western Arm, and small quantities may be procured, in smooth water, from the streams under the cascade.

Caution.—Vessels at anchor in this bay have found their compasses affected by local disturbances.

Ice.—The basin freezes over about the end of November, and the harbor about the middle of December, and remain so till the middle or end of May. Field ice remains till the middle or end of June, and icebergs may be met with all the year round, small bergs frequently drifting into Western Arm and occasionally into the harbor.

Tides.—It is high water, full and change, in Red Bay at 8h. 19m.; springs rise 4½ feet, neaps rise 2 feet; neaps range one foot.

Tidal Streams.—The flood stream sets westward, through the eastern channel, into the basin and through the harbor; the ebb in a contrary direction, but the streams are generally weak, unless influenced by high winds.

Directions.—Red Bay is easy of access for sailing vessels, with a leading wind, but only small vessels will find room to beat in or out, the entrance being 400 yards wide for them, and 200 yards wide for large vessels, between the shoal water off Saddle Island and the bowlders and shoal water off Moore Point.

From the eastward, Wisemans Point must be kept open south of Gull Island, bearing N. 48° E. (N. 82° E. mag.), until Cox Hill is in line with the south extreme of Twin Island, N. 73° W. (N. 39° W. mag.), when Thistle Rock will have been passed; Capstan Cove Point must then be kept open of Twin Island, bearing N. 56° E. (East mag.), until Tracey Hill bears N. 58° W. (N. 24° W. mag.), to avoid Scab Rock, when the entrance of the harbor may be steered for on this bearing.

When rounding Saddle Island, West Point must be kept well open of it, bearing S. 24° W. (S. 58° W. mag.), until the fall of the southern hillock of Twin Island is just open north of Saddle Island, S. 69° E. (S. 35° E. mag.), when the harbor may be rounded into and anchorage obtained, in from 6 to 9 fathoms water, as convenient. The flagstaff on the hill, 69 feet high, at the east side of the entrance to the basin, in line with the north corner of the Wesleyan Chapel which stands east of it, and is the only house on that hill, bearing N. 45° E. (N. 79° E. mag.), leads, in mid-channel, between Penney and Saddle Islands.

To pass into the basin, it is only necessary to keep in mid-channel between Penney Island and the eastern shore of the harbor to find anchorage in from 15 to 17 fathoms water, but the stage in the middle of the northern shore of Saddle Island must not be shut in with the wharf, on the eastern side of Penney Island, bearing S. 15° E. (S. 19° W. mag.), to avoid the shoal on the western shore of the basin.

The holding ground is good in the harbor, but not in the basin, and in the heavy NE. gales of autumn, which blow furiously through it, vessels frequently drag.

Proceeding westward, after clearing the harbor, Moore Point kept in line with the west extreme of Saddle Island, bearing North (N. 34° E. mag.), will lead eastward of the Louse and Belles Amours Shoals; but vessels can pass in safety between them by keeping the eastern bight of Capstan Cove in line with the south extreme of Twin Island, bearing N. 44° E. (N. 78° E. mag.).

(H. O. Chart No. 924.)

Coast.—The coast southwestward of West Point is foul, and should not be approached within $\frac{1}{4}$ mile. Teapot Rock, with 4 $\frac{1}{2}$ fathoms water over it, lies 400 yards from the shore at $\frac{1}{4}$ miles southwestward from West Point.

Carrol Cove, about 3 $\frac{1}{4}$ miles from Red Bay, is very small, with its entrance to the eastward. One or two fishing vessels are occasionally secured in it, moored to the rocks, and there are huts and fishing stages on the shore.

Little St. Modest Islands are two small, low, and bare islets, one mile apart, and close to the shore at the eastern point of Pinware; they afford no shelter to shipping.

Soldier Rock, awash at low water, lies $\frac{1}{4}$ mile S. 69° E. (S. 35° E. mag.) from the west extreme of the western islet. This rock must be carefully avoided in approaching Pinware from the eastward.

St. Modest Island is a small bare islet close to the west point of Pinware. Within this islet fishing vessels moor to the rocks on either side, but it is useless for larger vessels. There are a few houses inside Little St. Modest Islands and a large settlement inside St. Modest Island, the latter locally known as The Tickle.

Pinware Bay, 11 miles southwestward of Red Bay, is 3 miles wide across the mouth, from the western of Little St. Modest Islands to St. Modest Island, and about 2 miles deep. There is anchorage in this bay in 10 fathoms water, over sandy bottom, but it is open to south and east winds, which send in a heavy swell. There is, moreover, a rocky shoal on its west side, with 12 feet water over it, bearing N. 10° E. (N. 44° E. mag.), nearly one mile from St. Modest Island, and about $\frac{1}{4}$ mile S. 34° E. (South mag.) from Ship Head, a small rocky peninsula in the west part of the bay. There is a river at the head of Pinware which boats can enter at high water, and a fine sandy beach, southwestward of it, extends to the rocky peninsula just mentioned. The best anchorage is off the center of this beach. There is a conspicuous house at the entrance to the river, and there are a few huts in the bay.

Granite, which has formed the coast line from York Point, ceases to do so at the west point of Pinware, being succeeded by sandstone. The granite, however, is seen occasionally at the water's edge, under the sandstone, at various points farther westward.

Diablo Bay.—Diablo Bay, having a small village at its head, is a small open bay $3\frac{1}{4}$ miles southward of Pinware.

Anse à Loup (Loup Bay), which is 3 miles farther, will be readily known by the magnificent cliffs of red sandstone at its east entrance point, which are about 350 feet high and extend 2 or 3 miles to the northeastward of it.

Schooner Cove, at the south point of Anse à Loup, is open to the northeastward, but nevertheless fishing vessels anchor in it, in 7 fathoms water, during the summer months. There is a fishing establishment and a few houses at this cove, and the entrance may be readily recognized from seaward by a flagstaff and small white signal hut on the summit of the high entrance point.

Anse à Loup is $1\frac{1}{4}$ miles wide and $1\frac{1}{4}$ miles deep, extending in to the northwestward between high tablelands of sandstone, covered with green moss and grass, highest on the eastern side, where it terminates in the cliffs before mentioned. There is a fine sandy beach, and a river, which small boats can enter at high water, at the head of the bay.

Although this bay is quite open to the southeastward, yet vessels anchor here at all times during the summer months, the holding ground being extremely good. The best anchorage is in the north end of the bay, in 10 fathoms water, over sand, about $\frac{1}{4}$ mile off shore, and with the entrance of the river bearing N. 10° E. (N. 44° E. mag.). Shoal water extends about 600 yards from the north side of the bay, and vessels should not anchor in less than ten fathoms water.

Amour Point (corrupted from Pointe aux Morts, and locally known as Cape Shallop), situated 4 miles westward of Anse à Loup, is a low point, with several rocks off it, under the slope of a hill 190 feet high, which falls in a series of terraces, faced by cliffs, to the shore.

Light.—The lighthouse on Amour Point, a circular tower 104 feet in height and painted white, exhibits, at an elevation of 152 feet above high water, a fixed white light, which should be visible 18 miles. It is shown from the 1st of April to the 20th December of each year.

Fog Signal.—A fog whistle, situated 55 yards SE. of Amour Point Lighthouse, gives a blast of eight seconds duration, followed by fifty-two seconds silence, every minute. With easterly winds it is not easily heard when eastward of the lighthouse. Should the

whistle be out of order, a horn or trumpet will sound blasts of similar duration. It is stated that late in the year the water supply freezes, and the signal is temporarily suspended.

Caution.—Too much reliance should not be placed on hearing this fog signal, as, from unexplained causes, the sound can not be heard sometimes, even from short distances.

(B. A. Chart No. 1631.)

Forteau Bay is 4 miles wide between Amour Point on the east and Forteau Point on the west.

Over each shore of Forteau Bay the hills fall in terraces from elevations of 590 feet. Forteau Point slopes from a hill 212 feet high, from which the hills rise gradually in long slopes, but faced by cliffs on the seaward side, with an occasional gorge. From seaward two conspicuous lines of cliffs will be recognized—Crow Head, 240 feet high, on the west side of Anse aux Morts, and Chimney Head, 144 feet high, on the west side of the bay. Near the southern extreme of the latter Overfall Brook falls into the sea from a height of 118 feet, the volume of water varying with the season, so that occasionally the stream is very small. A church with a spire, and several houses near it, stand close eastward of English Point, which is a small hillock 25 feet high, situated in the north part of the bay. From this point westward the water is shoal, and an inlet that nearly dries at low water extends to the mouth of Forteau Brook, which discharges the waters of several lakes. Boats can go up to the mouth of the brook at half tide, but care must be taken to avoid the numerous boulders. Between the first and second lakes is a waterfall that can be seen occasionally from seaward.

Anse aux Morts, immediately north of Amour Point, is an open bight with deep water close to the east shore, but on the north side the coast is foul for a short distance, and the water shoals rapidly to the head.

Anchorage.—Anchorage, with shelter from easterly winds only, may be obtained in from 6 to 10 fathoms water, as convenient, but large vessels should not bring the large house on the south shore to bear southward of S. 80° E. (S. 46° E. mag.), and should anchor at the distance of about 400 yards from the wharf.

The head of Forteau Bay is composed of a sandy beach, behind which are situated several houses and the school, the latter a plain building, painted white; the principal settlement is on the west side of the head of the bay. The southernmost and most conspicuous buildings, known as Jobs Room, are situated immediately within the flats, a ledge of rock, that just covers at high water, and affords shelter to the boats. The northernmost house of this

settlement is used as the postoffice during the summer. The shores of Forteau Bay are generally bold, and there is no danger beyond the distance of 200 yards from the shore, except at the head, where a shoal extends, from the schoolhouse, $\frac{1}{4}$ mile across the bay. Good salmon and trout fishing may be obtained here during the season.

Anchorage.—The best anchorage is in from 10 to 14 fathoms water, in the NW. part of the bay, with the northernmost stage, at the junction of the rock and sand, bearing about West (N. 56° W. mag.). This is said to be the best roadstead in the Strait of Belle Isle; the holding ground is good, and fishing vessels remain moored there all summer, but a heavy swell rolls in with south-westerly winds.

Water may be obtained from streams flowing down the hill-side at the settlement on the west side of the bay, and at Jobs Room there is a pipe, to which a hose could be fitted, for filling boats. There is no large wood within 10 miles of the neighborhood of the settlement.

The resident population numbers about 150, who live inland from November till May, when they return to prosecute the seal fishery till the end of June; and during the latter month, as soon as navigation is open, the Newfoundland fishermen arrive, and number about 300.

Ice.—The bay freezes over about the middle of December, and the ice breaks up about the middle of May.

Tides.—It is high water, full and change, in Forteau Bay at 10h. 25m.; springs rise $5\frac{1}{2}$ feet, neaps rise 3 feet; neaps range $1\frac{1}{2}$ feet.

Tidal Streams.—The flood stream, in calm weather, sets to the northward on the east shore and to the southward on the west shore, and the ebb in a contrary direction; but these streams are so weak in the bay that a fresh breeze from any quarter will change their direction. Off Amour and Forteau Points the tides are strong and extremely irregular, occasionally running in one direction with a velocity of 4 to 5 knots an hour close to the shore, and in an opposite direction a short distance off. In sounding off these points, during the recent survey, three distinct streams were met within a distance of 2 miles; the tide rips were of sufficient strength to turn H. B. M. S. *Gulnare* at right angles to her course, and these irregularities were continually changing without any apparent cause.

Caution.—In approaching Forteau Bay in foggy weather, great caution is necessary on account of these irregularities and of the little warning that can be given by the hand lead before the shore is reached; but by careful sounding the deep gully, with more than 50 fathoms water in it, that stretches nearly across Forteau Bay, and is within $\frac{1}{4}$ mile of Amour Point, will serve as a warning that the bay or coast is near.

Anse Éclair, 4 miles westward of Forteau Point, is small, exposed to the southward, and affords no anchorage. A low islet and reef extend together about $\frac{1}{4}$ mile SW. from the east entrance point. There is a fishing establishment close within this point, and also at the head of the cove.

Westward of Anse Éclair the hills are remarkable for the large slabs of rock facing the cliff, with which all the hills fall to the sea. Those hills are generally flat, rising gradually to higher ranges in the background.

Blanc Sablon (formerly Anse Sablon) is 7 miles westward of Forteau Point. It is partly sheltered by Isle au Bois and Greenly Island, but SW. winds send in a heavy sea, and vessels have been lost there in autumnal gales. Generally it is a safe anchorage during the summer months, and fishing vessels remain moored there.

The hills fall in cliff, on the east side, from elevations of 402 to 253 feet, and on the west shore from a flat hill, 342 feet high, that extends westward in a spur and terminates in a sharp bluff, 167 feet high, over Long Point. There is a curious saddle-shaped hill, 440 feet high, at $1\frac{1}{4}$ miles northward of the head of the bay.

The shores generally are of rock faced by boulders, but at the head there is a sandy beach on the west side of a projecting point, 21 feet high, on which are conspicuous white houses and wharves, known locally as Jobs Room. Blanc Sablon River separates the point from the sandy beach and drains a long valley and some large ponds. The hills on the east side fall in cliffs to the marshes in the valley, but the rise is gradual on the west.

Blandford Shoals range in depth from 15 feet to 5 fathoms, and occupy a space about 800 yards in extent in the middle of Blanc Sablon.

A rock, with one foot water on it, lies 265 yards from the shore, at $\frac{1}{4}$ mile northwestward of St. Charles Point, the eastern entrance point, and a cluster of rocks extends $\frac{1}{4}$ mile southward from the Barachois, a small cove eastward of Jobs Room. Shoal water occupies the entire NW. part of the bay, in which is a rock, awash at low water, 300 yards from the shore.

The coast westward from Lazy Point, the turning point westward, to Grand Point is bordered by rocks and shoals and should not be approached within $\frac{1}{4}$ mile.

Gulch Cove, a creek between two granitic spurs, is situated $\frac{1}{4}$ mile westward of Lazy Point, and is frequented by fishermen during the summer months. It is a dangerous place to approach, being surrounded by rocks; and the cove is so narrow that vessels are hauled in stern first and moored by chains to the rocks on either side. Losses, however, are not of frequent occurrence.

Grand (Long) Point, the turning point to Bradore Bay and the northwestern entrance point of the Strait of Belle Isle, has reefs and shoals extending nearly 800 yards southward from it.

Perroquet Bank, with $4\frac{1}{2}$ fathoms water over it, lies $1\frac{1}{2}$ miles S. 69° W. (N. 77° W. mag.) from Grand Point.

Isle au Bois, 167 feet high, is flat at the summit and generally covered with moss and coarse grass. Penneys Room is a large fishing establishment at the NW. extreme of the island, and there are several other houses on the east shore.

Shoal water extends 300 yards from the NE. coast of Isle au Bois, and The Breakers, a ledge of rocks that dry at low water, extend $\frac{1}{2}$ mile from a point near the SW. extreme, but there is deep water at 200 yards off from the west shore and the north point. When the boats can not land on the NE. side of the island, they do so at the Cow House, a small square rock by the side of a small but deep creek on the west shore, close south of the NW. extreme.

Greenly Island (Ile Verte) is $1\frac{1}{2}$ miles from Isle au Bois, and consists of two hillocks joined by a plateau between two coves, the northern being 84 feet and the southern 63 feet high. The NW. shore is bold, but off the SE. extreme are a rock that dries at low water and shoals that extend $\frac{1}{2}$ mile in a southeasterly direction. A large fishing establishment is situated in the eastern cove. Greenly Island is the resort of myriads of puffins, which appear suddenly in June and disappear as suddenly in October.

Light.—On the southwestern slope of the southern hillock on Greenly Island an octagonal-shaped tower, 78 feet in height and painted white, with a red lantern, exhibits, at an elevation of 108 feet, a revolving light having a period of revolution of three minutes, showing white for half a minute, then red for half a minute, and white for half a minute, followed by an eclipse of one and a half minutes. This light, exhibited from 1st April to 20th December, should be visible 15 miles. The keeper's dwelling, painted white, is attached.

Fog Signal.—During thick or foggy weather a steam horn sounds blasts of ten seconds duration, with an interval of eighty seconds between blasts.

The fog-signal house, a long low building, painted white, with a coal shed behind it, is 355 yards E. $\frac{1}{2}$ S. of the lighthouse.

Bank.—A bank, with $4\frac{1}{2}$ fathoms water over it, lies nearly midway between Greenly Island and the nearest point of the mainland from it.

Coal and Supplies.—A small stock of coal is kept here, of which about 50 tons could be supplied to vessels. Ships' stores generally, such as flour, salt beef, etc., may also be obtained.

Water may be obtained at high water from Blanc Sablon River.

Fisheries.—There are about 200 residents in Blanc Sablon and the neighborhood, who hunt for seal in May and June and other fur-bearing animals during the winter. About 500 fishermen from the east coast of Newfoundland are brought down in spring, and, with the residents, prosecute the cod fishery.

Directions.—Approaching Blanc Sablon from the eastward, the shore should be kept distant at least $\frac{1}{2}$ mile till near St. Charles Point, when the fall of the cliff over Anse Éclair Point should be kept open south of the south extreme of St. Charles Point, bearing N. 72° E. (S. 74° E. mag.), until the northern fall of the cliffs on the east side of Blanc Sablon River is in line with the westernmost wharf of Jobs Room, bearing N. 18° W. (N. 16° E. mag.), which will clear Blandford Shoals. Open this mark a little to the westward and run on it until the south fall of the northern hillock of Greenly Island is in line with the north extreme of Isle au Bois, bearing S. 48° W. (S. 82° W. mag.), when the vessel should proceed about 200 yards and anchor in 7 to 10 fathoms water, over sand. This position is the best in the bay for large vessels, but small craft can go into any depth, as convenient. Greenly Island Lighthouse in line with the north extreme of Isle au Bois, bearing S. 40° W. (S. 74° W. mag.), clears the shoal water at the head and the rocks extending from the Barachois.

Proceeding westward, the NW. point of Isle au Bois should be kept about $\frac{1}{2}$ mile distant, and rounded till the fall of the hill over St. Charles Point is in line with the NW. extreme of Isle au Bois, bearing N. 65° E. (S. 81° E. mag.), when, by keeping on that mark till near Greenly Island, the bank between that island and the mainland will be avoided; or, by keeping in mid-channel between Isle au Bois and Greenly Island, the vessel may proceed to the southward.

Ice.—Blanc Sablon freezes over about the middle of December and breaks up about the middle of May. The first steamer arrives about the end of May, and the last vessel leaves about 20th October. Field ice makes during the winter, but finally leaves about the middle of June. Icebergs may be met with at any time, but only a few reach as far west as Greenly Island.

In 1833, the channel between Isle au Bois and the main was frozen across on the 28th of June, after the winter ice had broken up. Packed ice remained till the middle of July, and numerous icebergs all the year.

Tides.—It is high water, full and change, in Blanc Sablon at 10h. 32m.; springs rise 5 feet, neaps rise $2\frac{1}{2}$ feet; neaps range $1\frac{1}{2}$ feet.

Tidal Streams.—The usual flood stream sets through the anchorage and channel between the islands and the mainland, in a westerly direction, with an average velocity of $1\frac{1}{2}$ knots an hour, and

the ebb stream sets in the opposite direction, but with persistent winds from one direction the streams have been known to attain a rate of $2\frac{1}{2}$ knots an hour. With opposing winds, a very heavy sea is raised in the channel between the islands and the mainland, and occasionally boats are swamped there. It is particularly bad at the north extreme of Isle au Bois, where the tidal stream between the islands meets that of the other channel.

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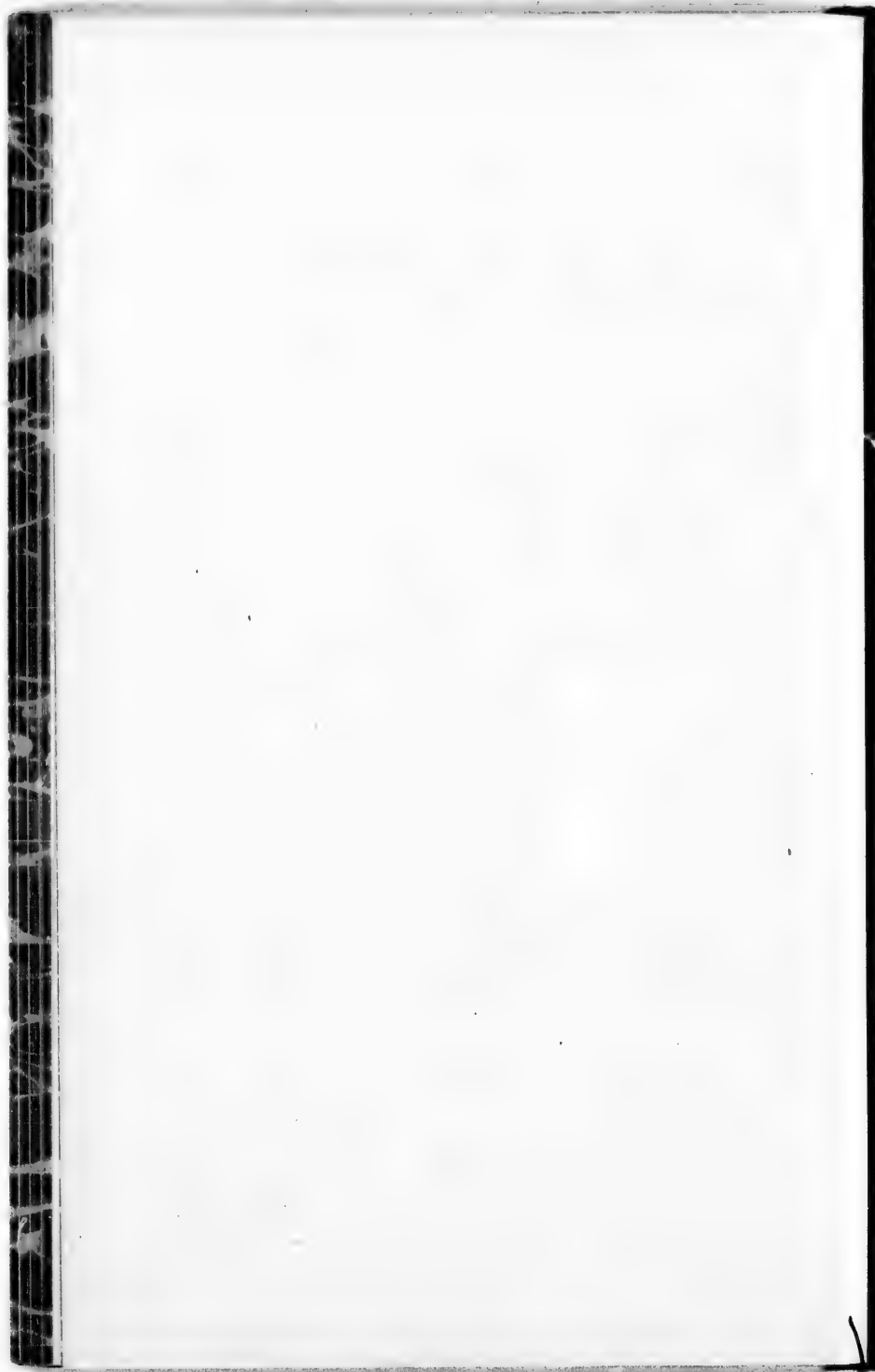
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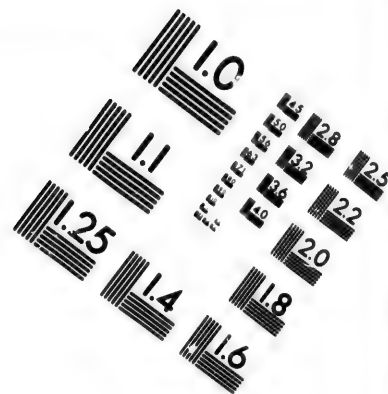
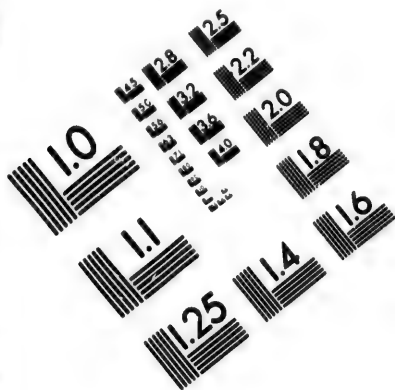
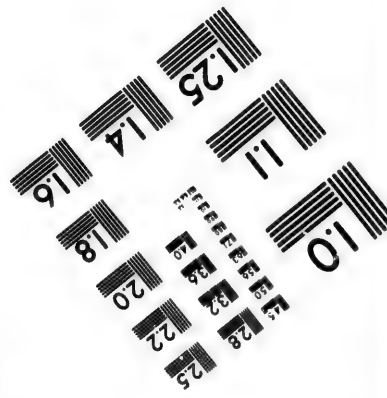
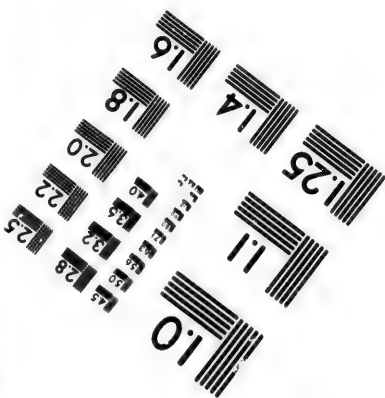
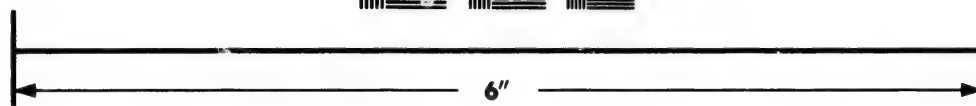
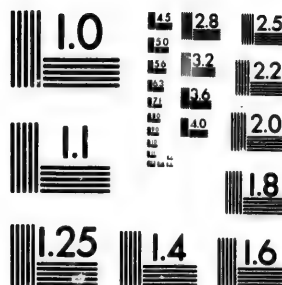


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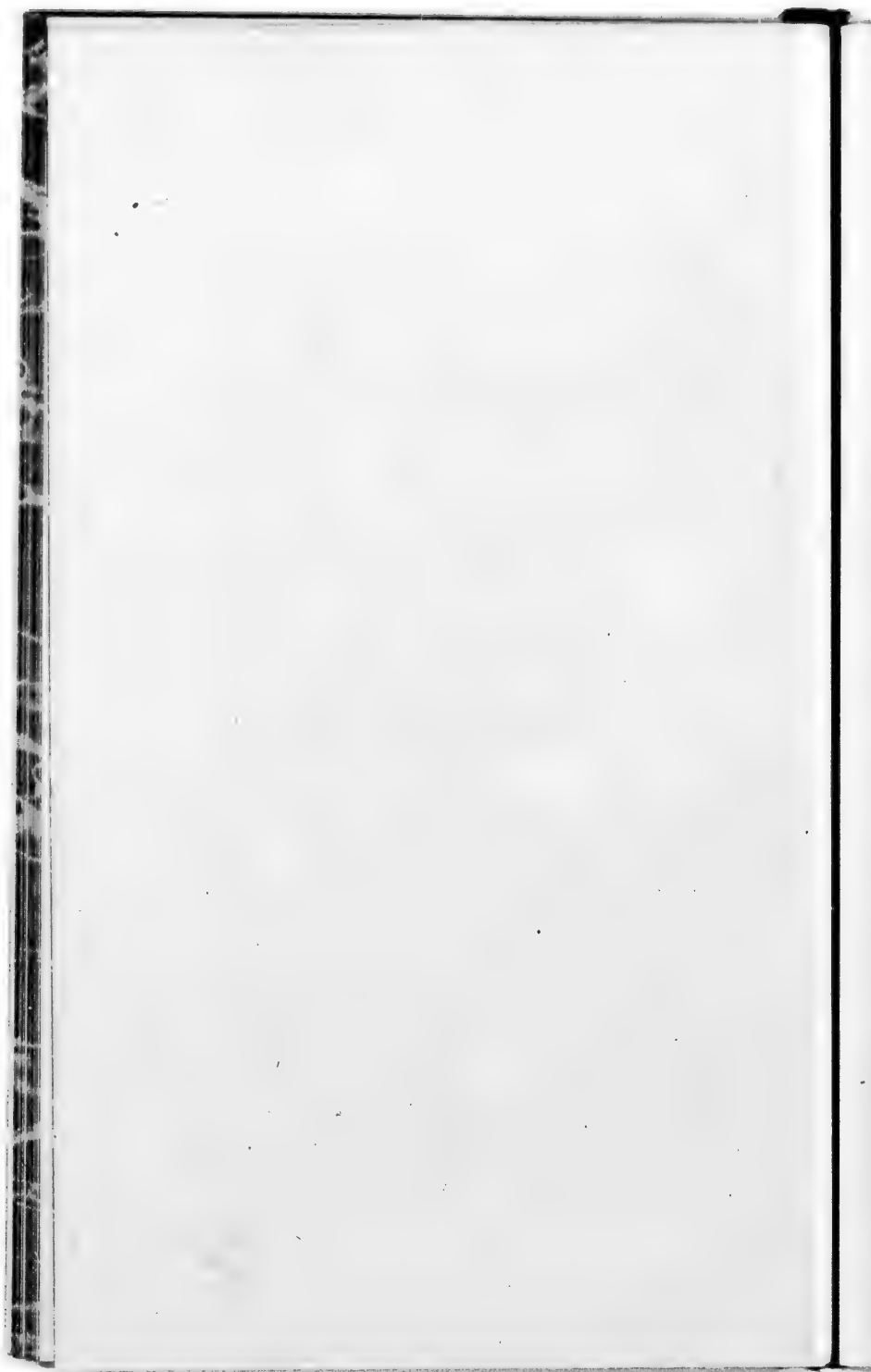
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